TEMPERATURE AND OXYGEN DATA FOR THE MUSKOKA–HALIBURTON STUDY LAKES (1983–1984)

R.A. Reid and R. Girard

DATA REPORT DR 85/2

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DATA REPORT SERIES

The data presented in this report were collected by staff of the Aquatic Ecosystems Section of the Water Resources Branch of the Ontario Ministry of the Environment as part of the Lakeshore Capacity Study or the Acid Precipitation in Ontario Study. This unreviewed report does not necessarily reflect the views or opinions of the Ontario Ministry of the Environment.

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PREFACE

The unpublished Data Report Series is intended as a readily available source of basic data collected for lakes and watersheds in the Muskoka-Haliburton area of Ontario. These data were collected as part of the Lakeshore Capacity Study and/or the Acid Precipitation in Ontario Study.

The limnological portion of the Lakeshore Capacity Study (1975-81) was initiated to investigate the relationships between lakeshore development and lake trophic status in low ionic strength Precambrian lakes. The Acid Precipitation in Ontario Study (1979 - present) was initiated, in part, to investigate the effects of the deposition of strong acids on aquatic and terrestrial ecosystems in Ontario. The primary findings of these studies have been and will continue to be published as reviewed papers and technical reports.

ABSTRACT

Isotherm maps, dissolved oxygen isopleth maps and depth and volumes of strata are presented for the Muskoka-Haliburton study lakes (1983 - 1984).

R.A. Reid and R. Girard. Temperature and oxygen data for the Muskoka-Haliburton study lakes (1983-1984).

INTRODUCTION

This report summarizes the 1983-1984 oxygen and temperature data and is an update of the following data reports; Girard et al (1983), Reid et al (1983) and Reid et al (1983). Water temperatures were measured at 1 m intervals to the lake bottom (0.5m intervals through the metalimnion) with a Flett Research thermistor. The methodology used to collect the oxygen information is summarized by Scheider et al (1983).

The depths of the epilimnion, metalimnion and hypolimnion were calculated from a temperature vs depth plot (Wetzel 1975). Calculations of volume of strata are defined by Hutchison (1957). The exception is Heney Lake which does not stratify.

REFERENCES

Girard, R., B. Locke and R.A. Reid. 1983. Depth and volume of strata in the Muskoka-Haliburton study lakes (1976-1982). Ontario Ministry of Environment Data Report 83/10.

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Wetzel, R.G. 1975. Limnology. W.B. Saunders Co. Toronto. 743 p.

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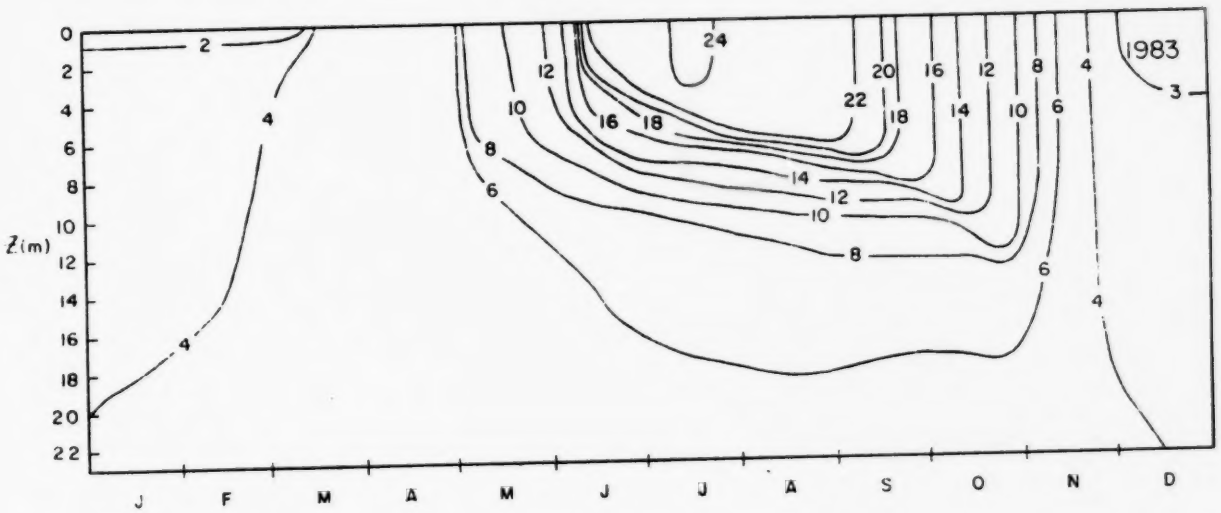
FIGURE 1 - 9 : ISOTHERM (^{o}C) maps of the study lakes.

FIGURE 1

BLUE CHALK LAKE TEMPERATURE (°C)



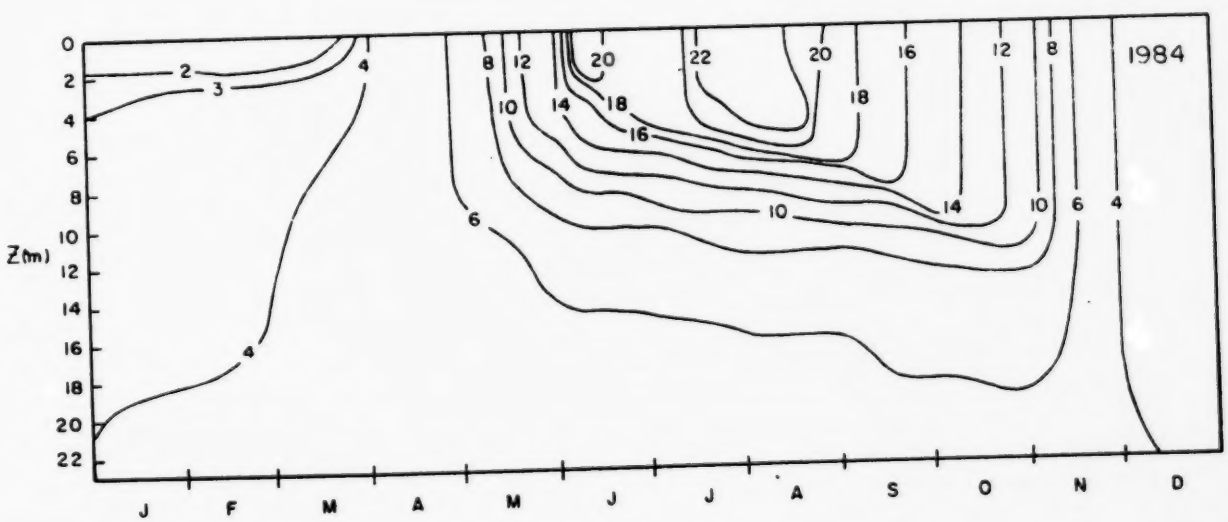
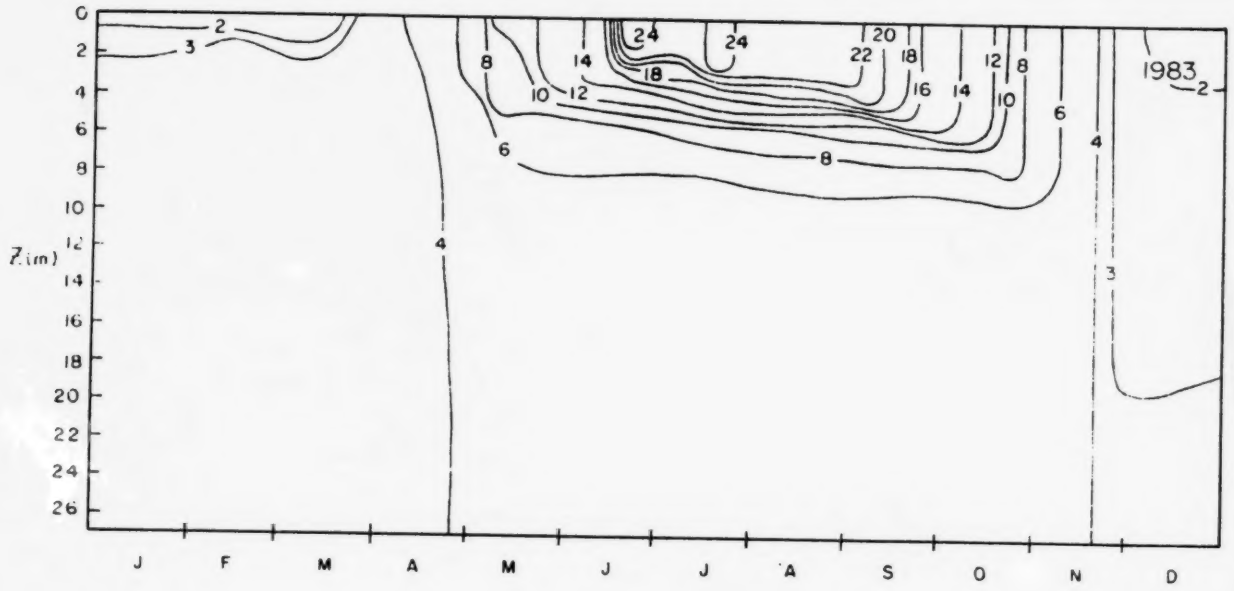


FIGURE 2

CHUB LAKE TEMPERATURE (°C)



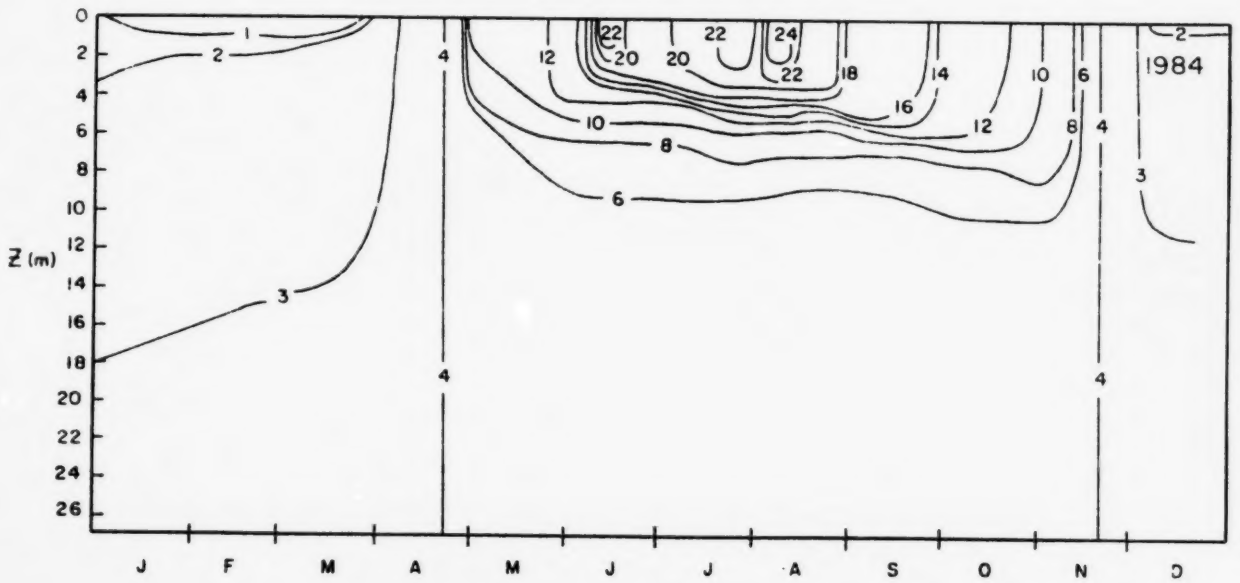


FIGURE 3

CROSSON LAKE TEMPERATURE (°C)

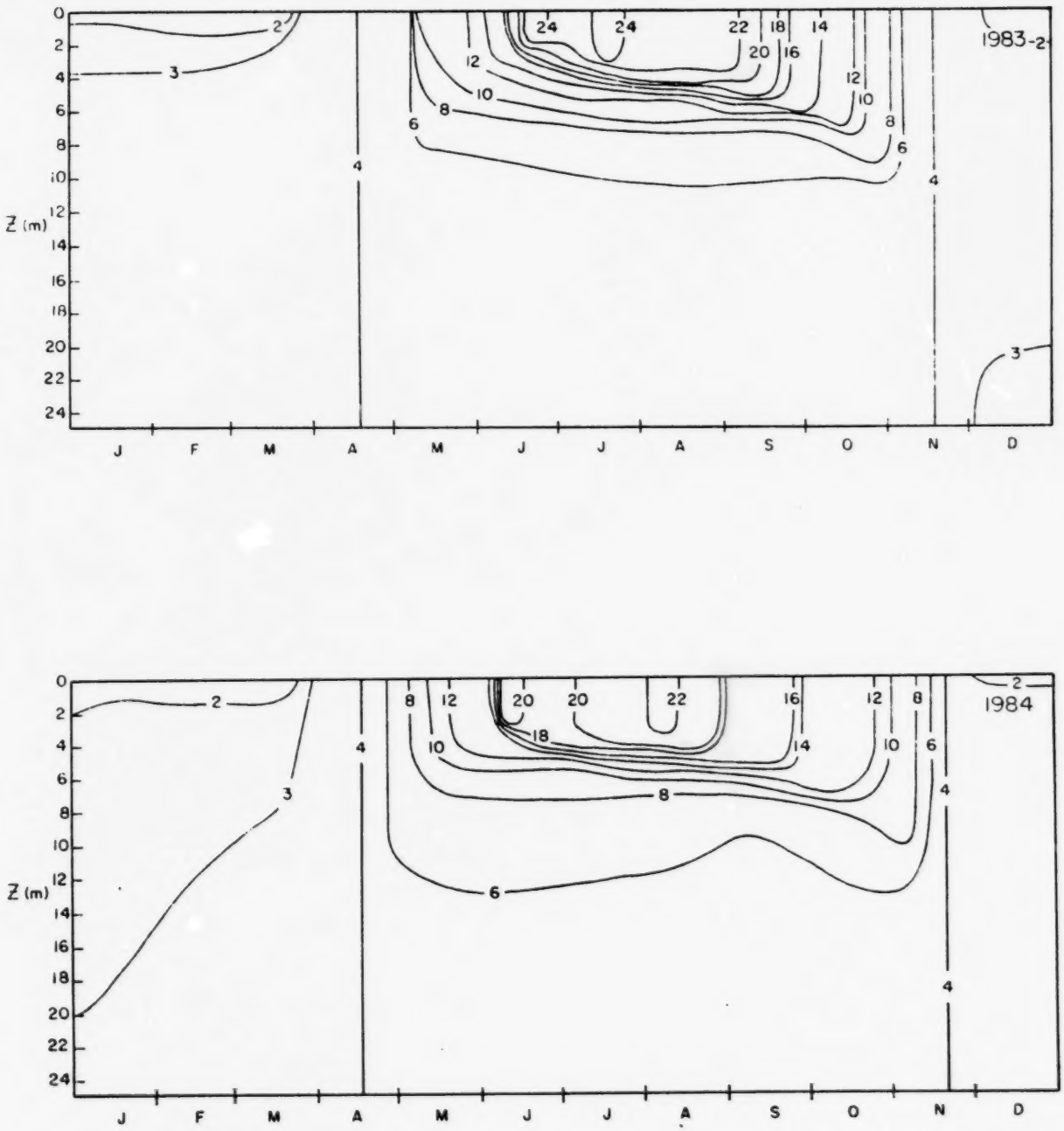
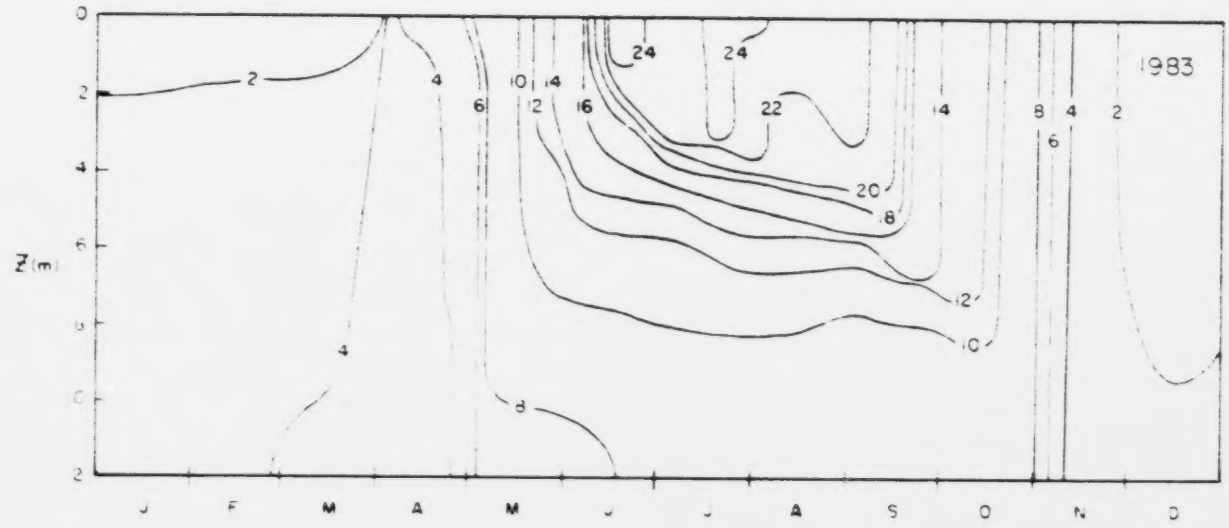


FIGURE 4

DICKIE LAKE TEMPERATURE (°C)



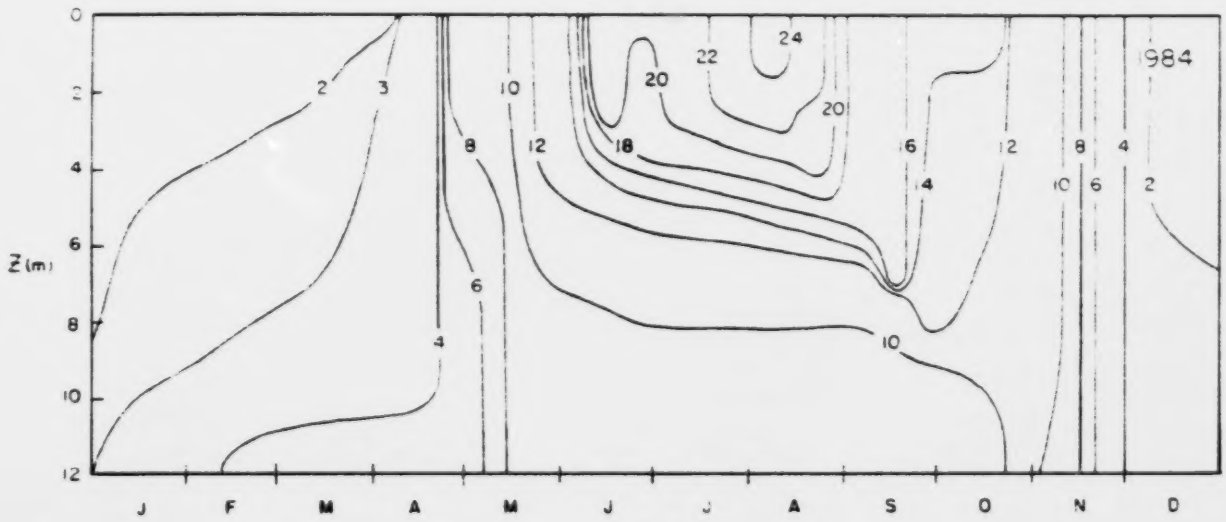


FIGURE 5

HARP LAKE TEMPERATURE (°C)

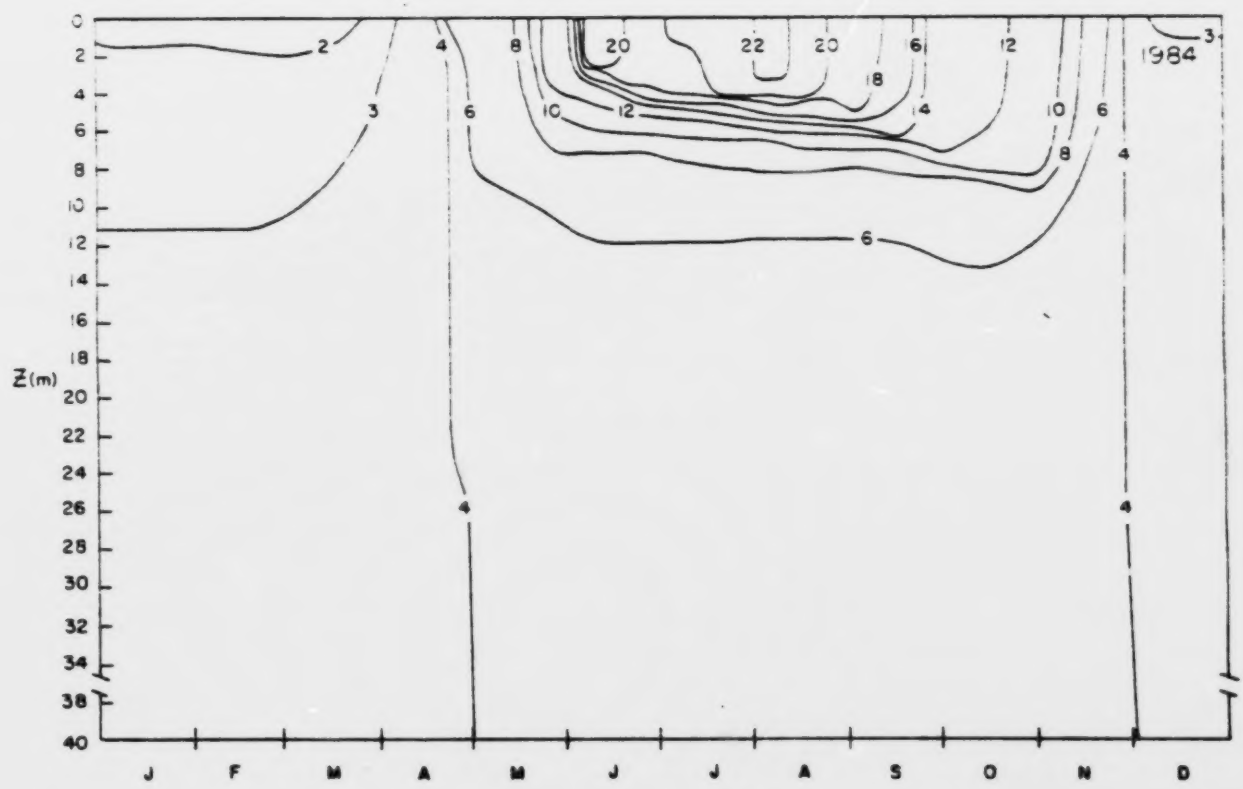
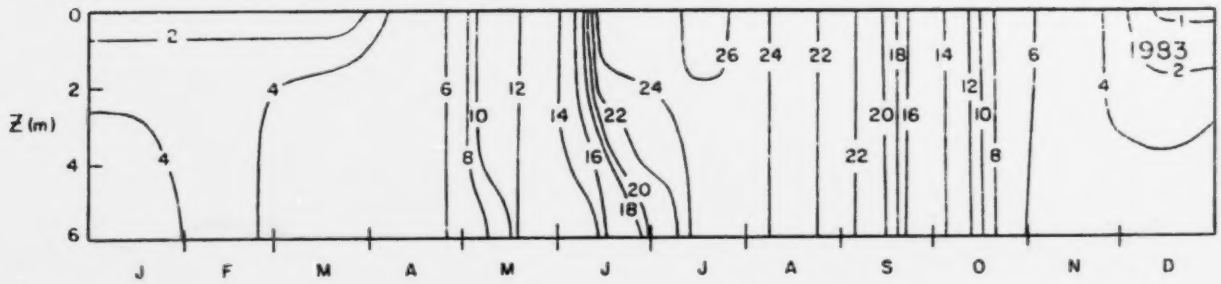


FIGURE 6

HENEY LAKE TEMPERATURE (°C)



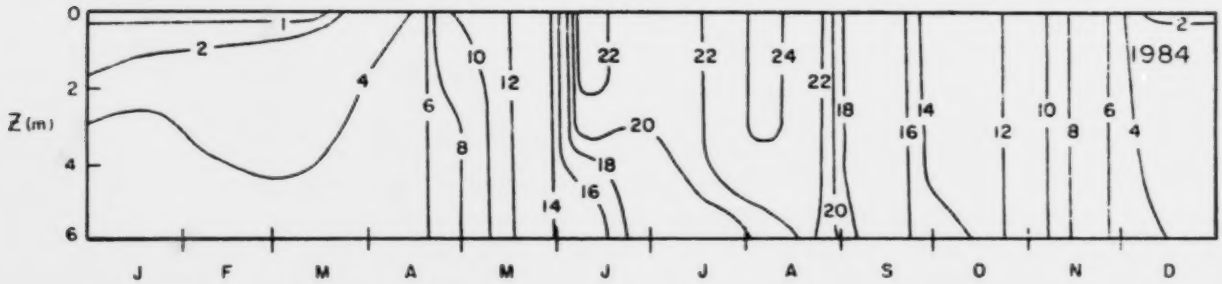


FIGURE 7

PLASTIC LAKE TEMPERATURE (°C)

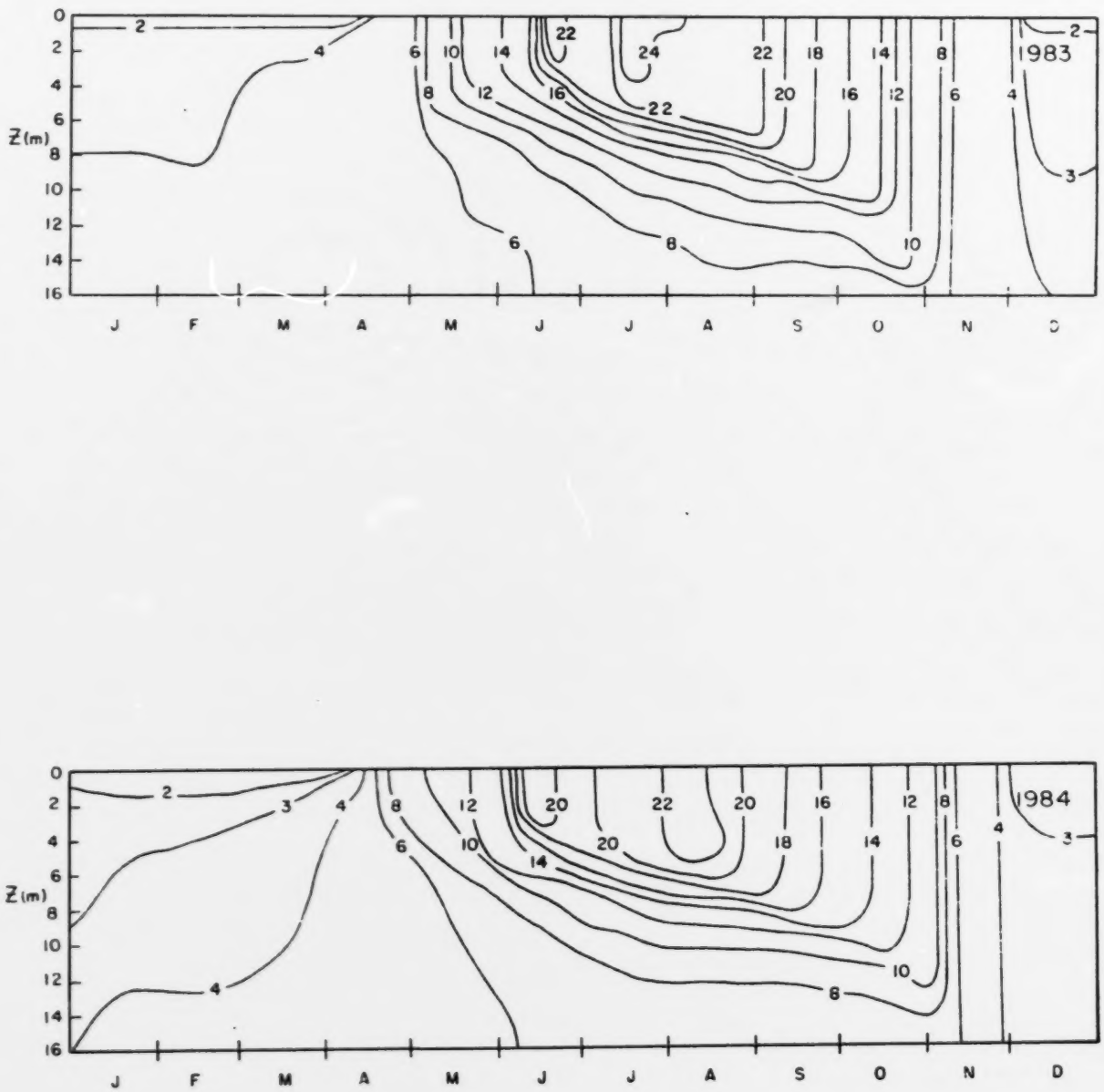
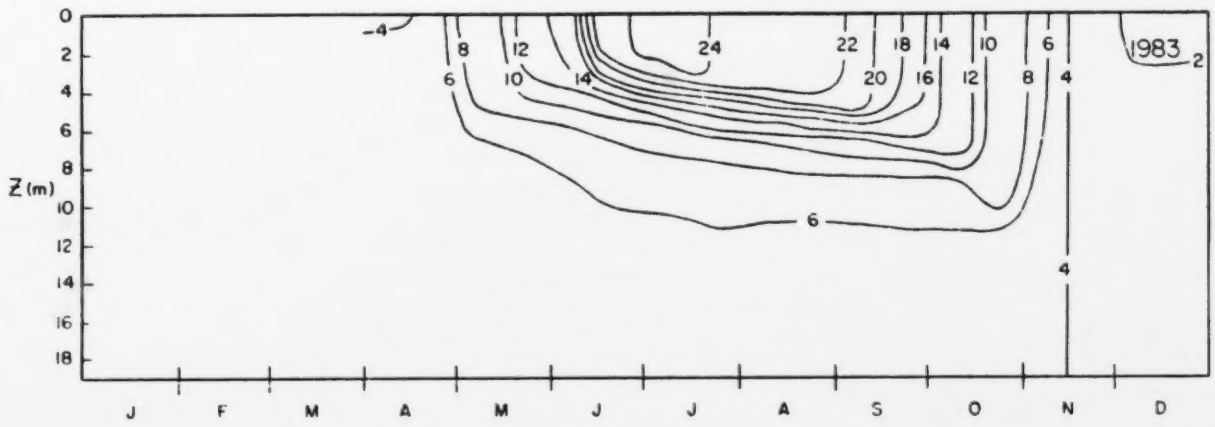


FIGURE 8

RED . CHALK LAKE - EAST BASIN TEMPERATURE (°C)



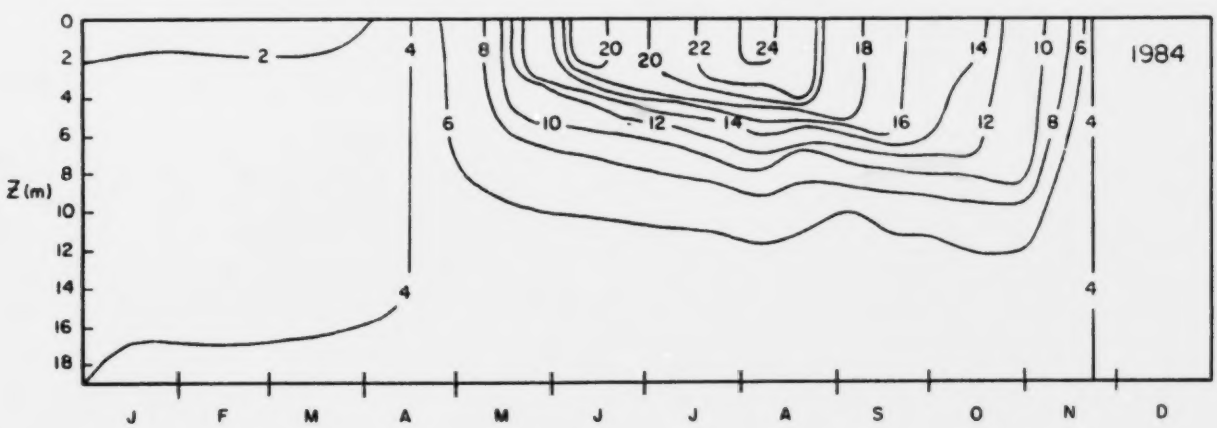
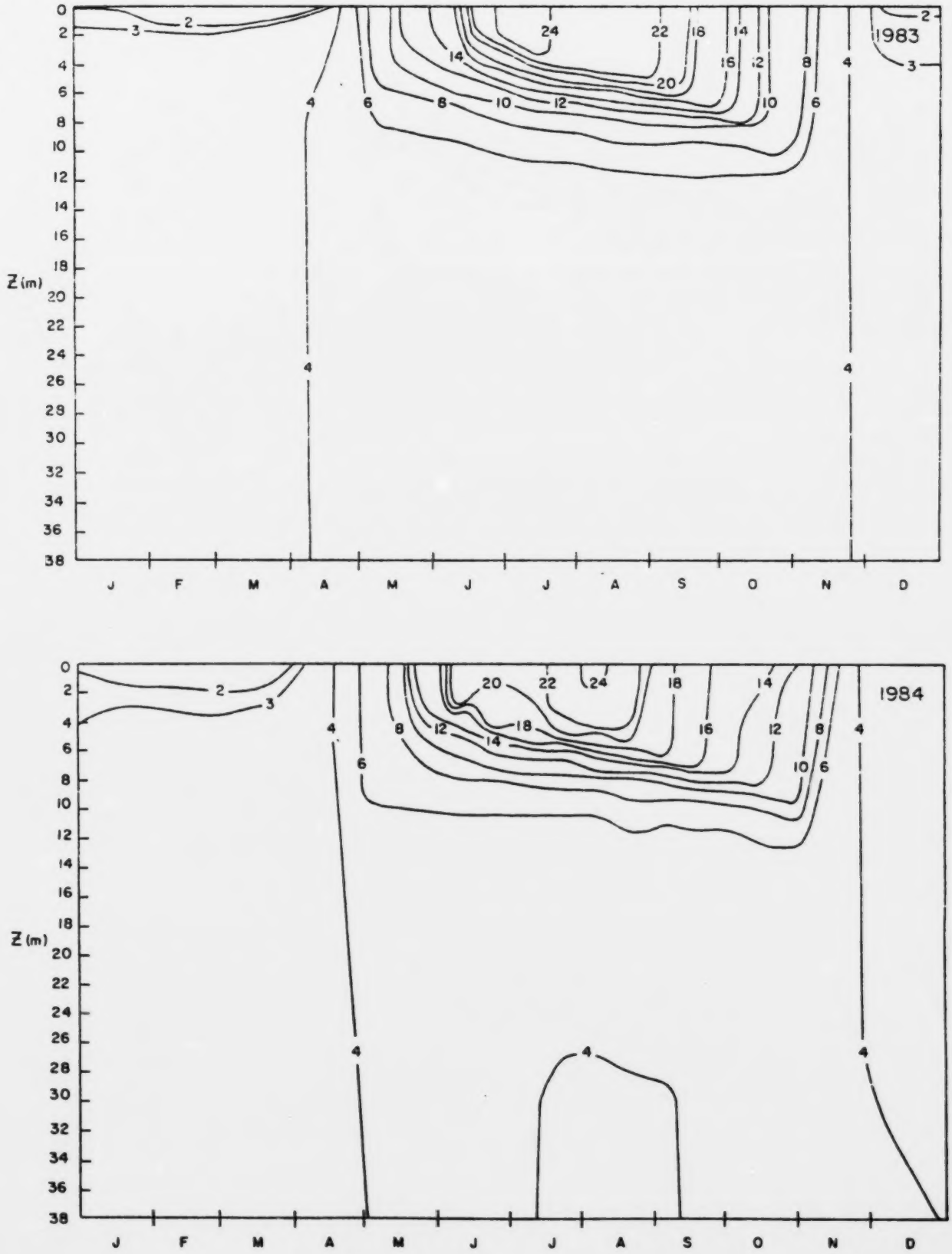


FIGURE 9

RED CHALK LAKE - MAIN BASIN TEMPERATURE (°C)



FIGURES 10 - 18: Dissolved oxygen (mg L^{-1}) isopleth maps.

FIGURE 10

BLUE CHALK LAKE OXYGEN ($mg \cdot L^{-1}$)

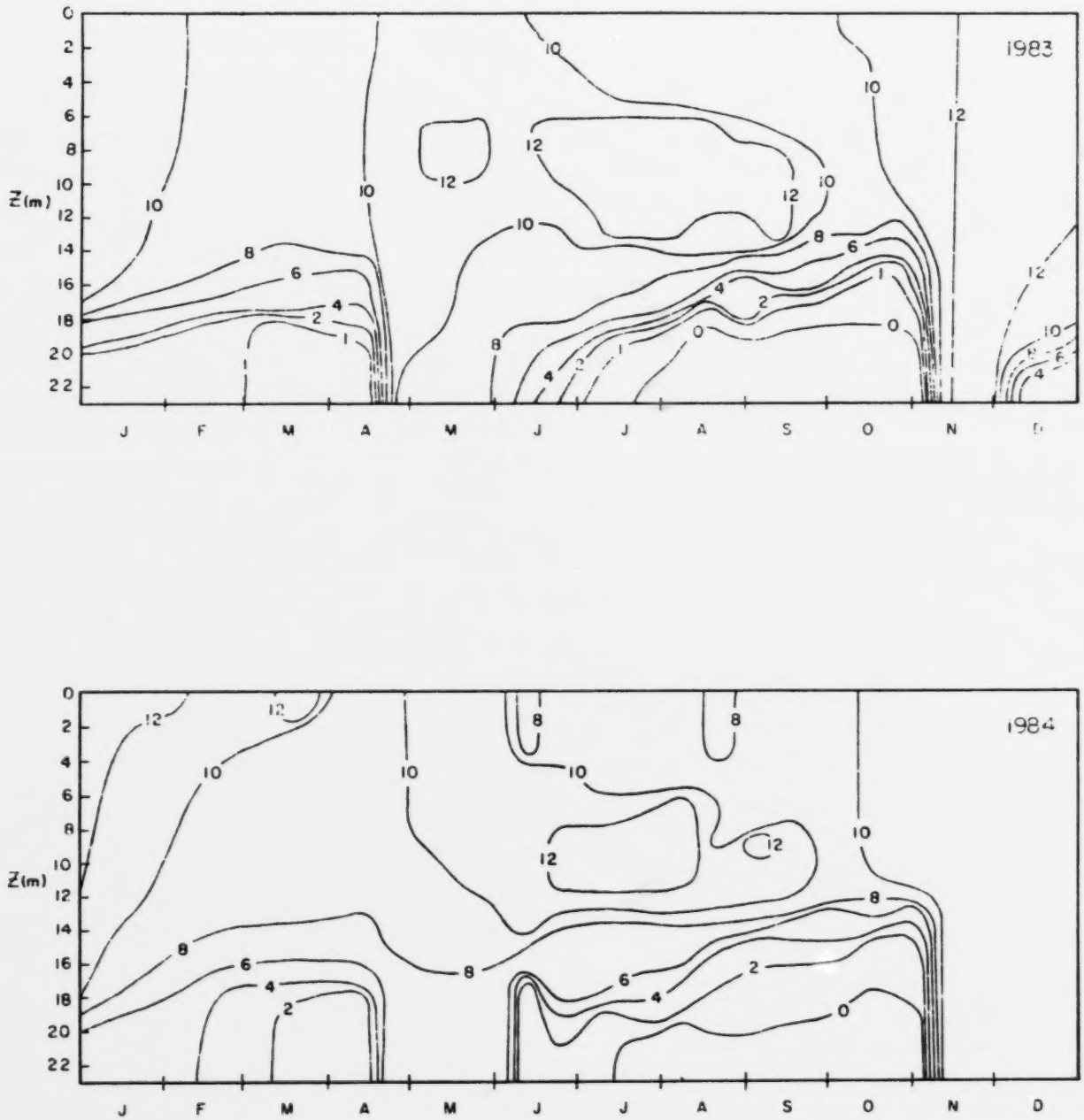


FIGURE 11

CHUB LAKE OXYGEN ($mg \cdot L^{-1}$)

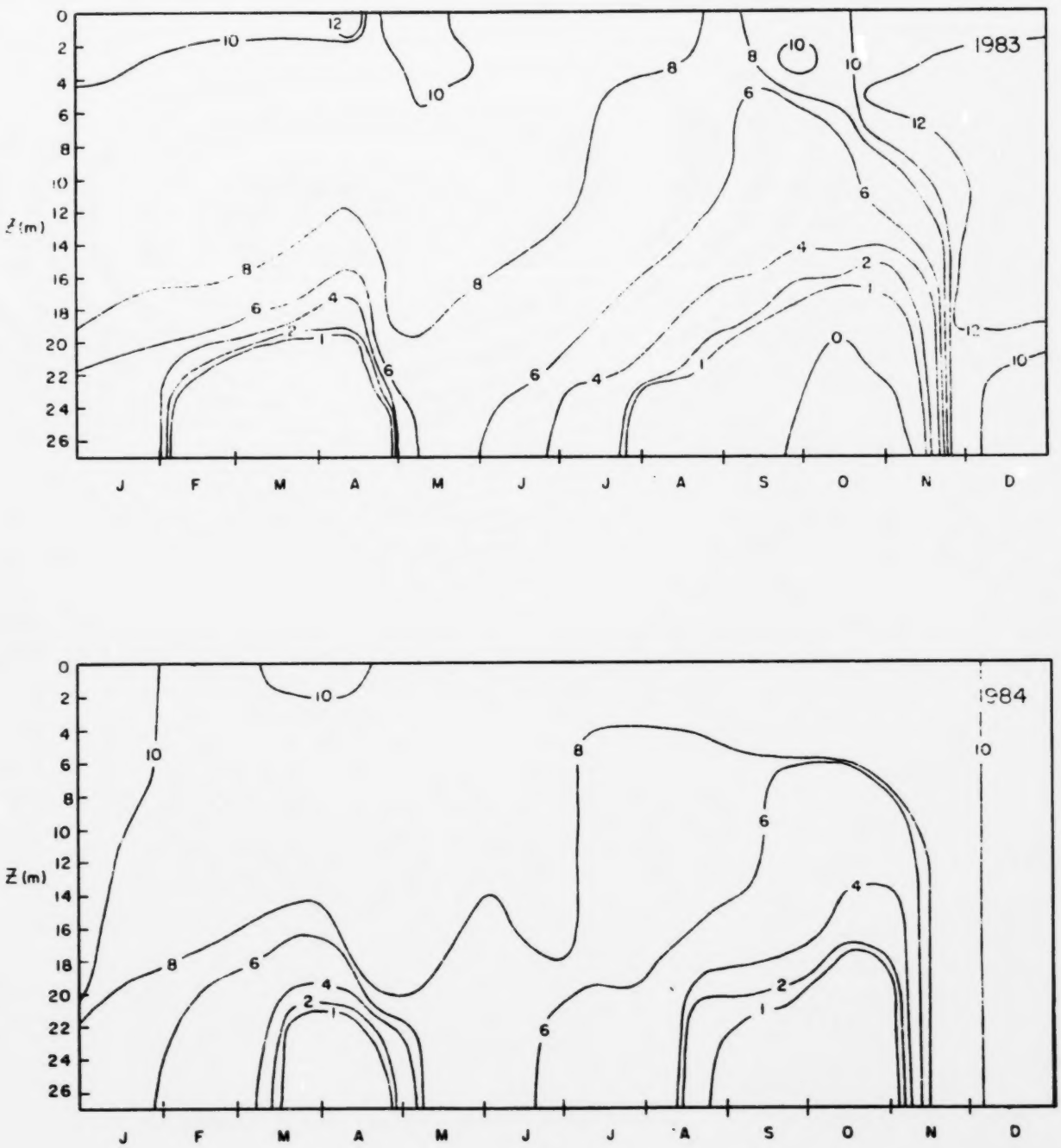
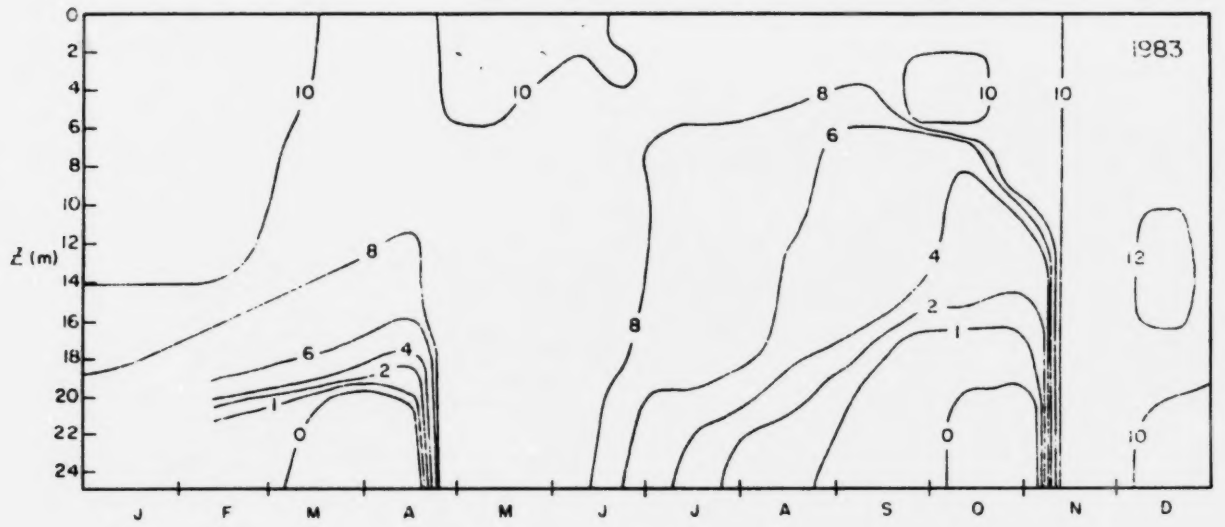


FIGURE 12

CROSSON LAKE OXYGEN ($mg \cdot L^{-1}$)



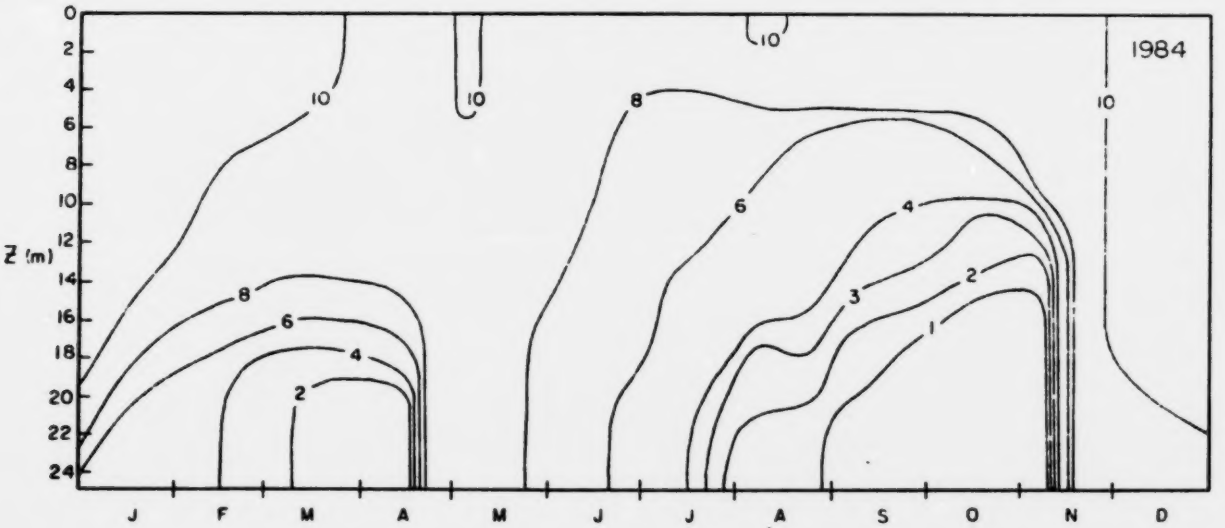


FIGURE 13

DICKIE LAKE OXYGEN ($mg \cdot L^{-1}$)

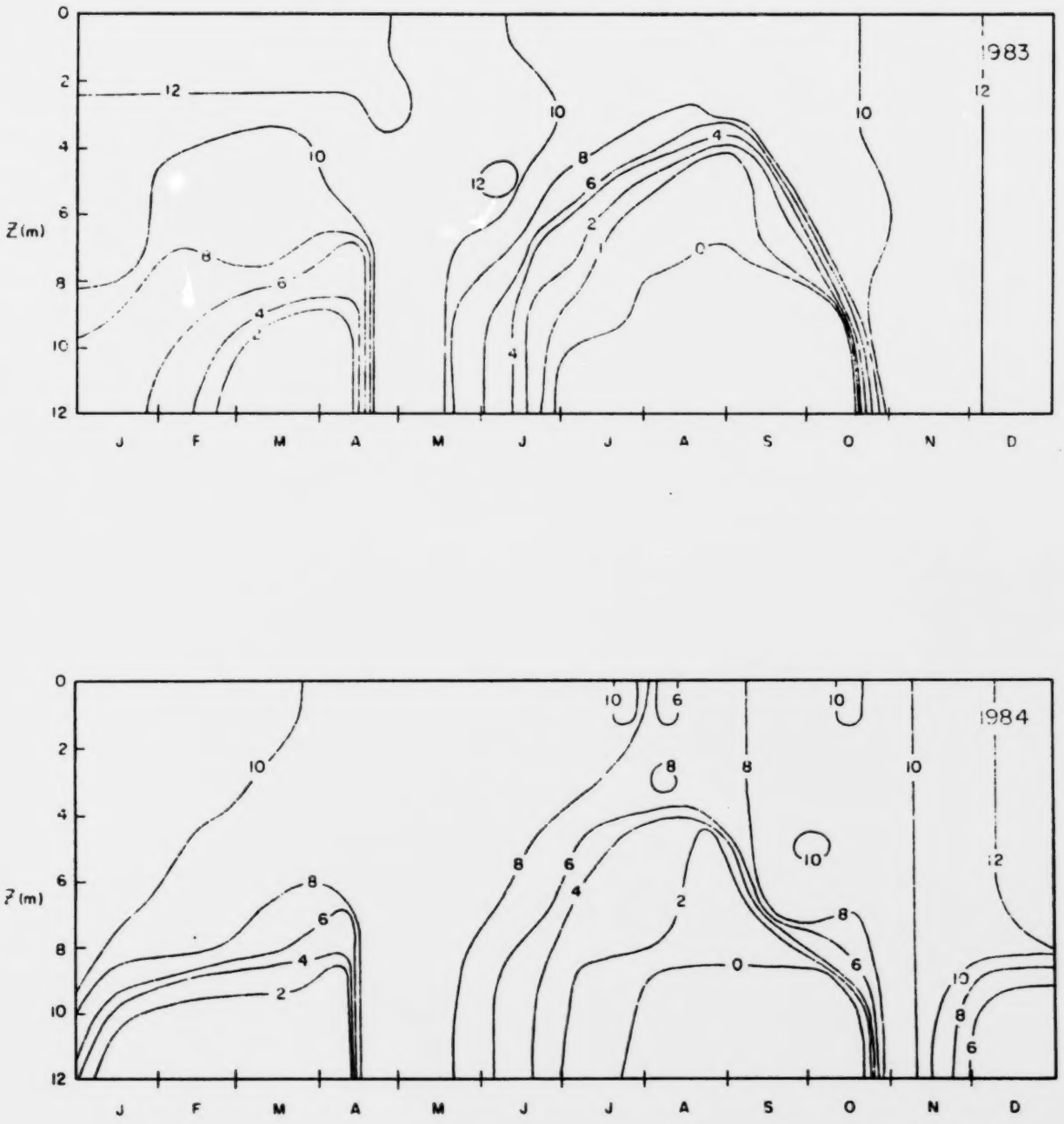


FIGURE 14

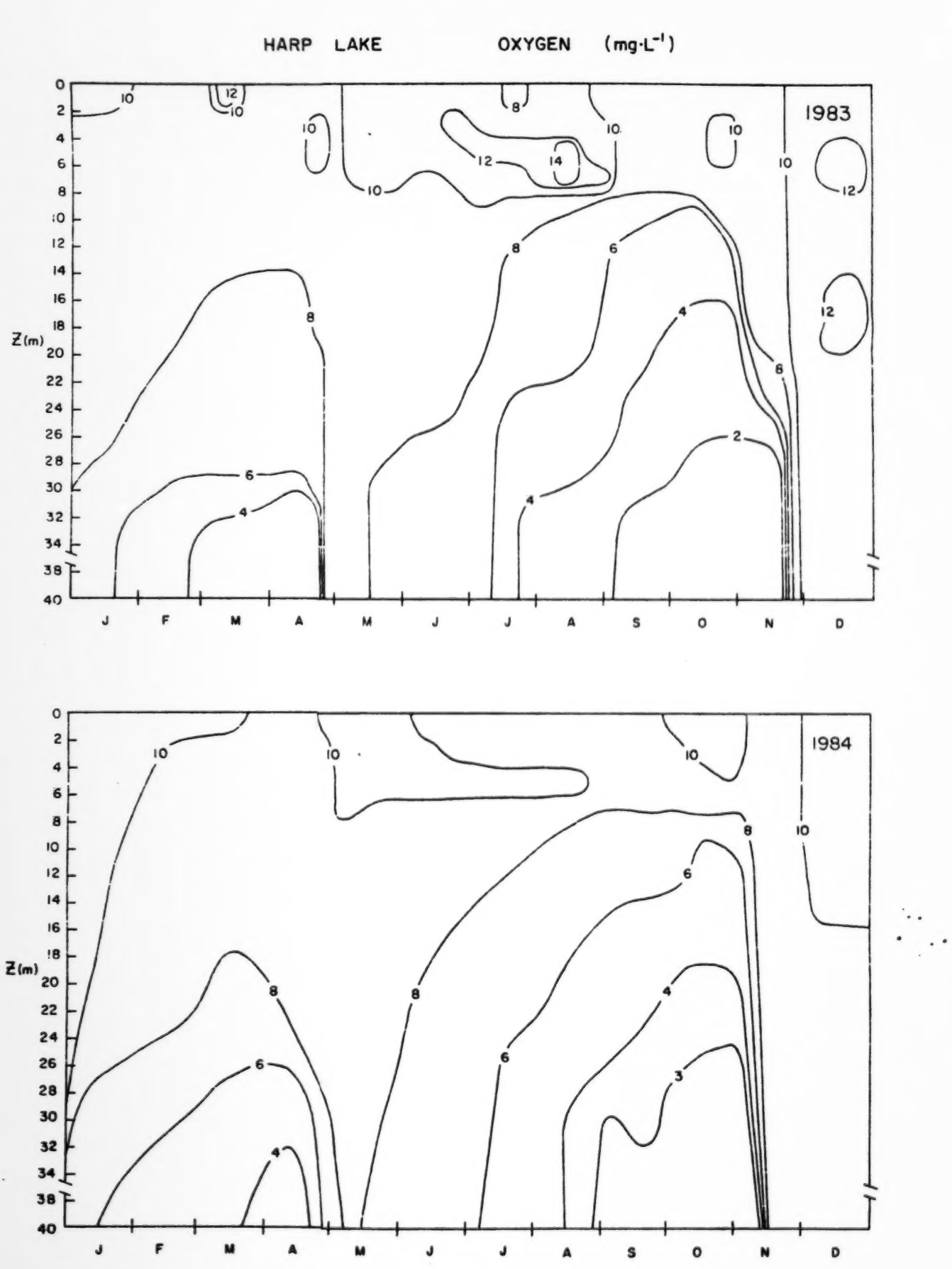


FIGURE 15

HENEY LAKE

OXYGEN ($mg \cdot L^{-1}$)

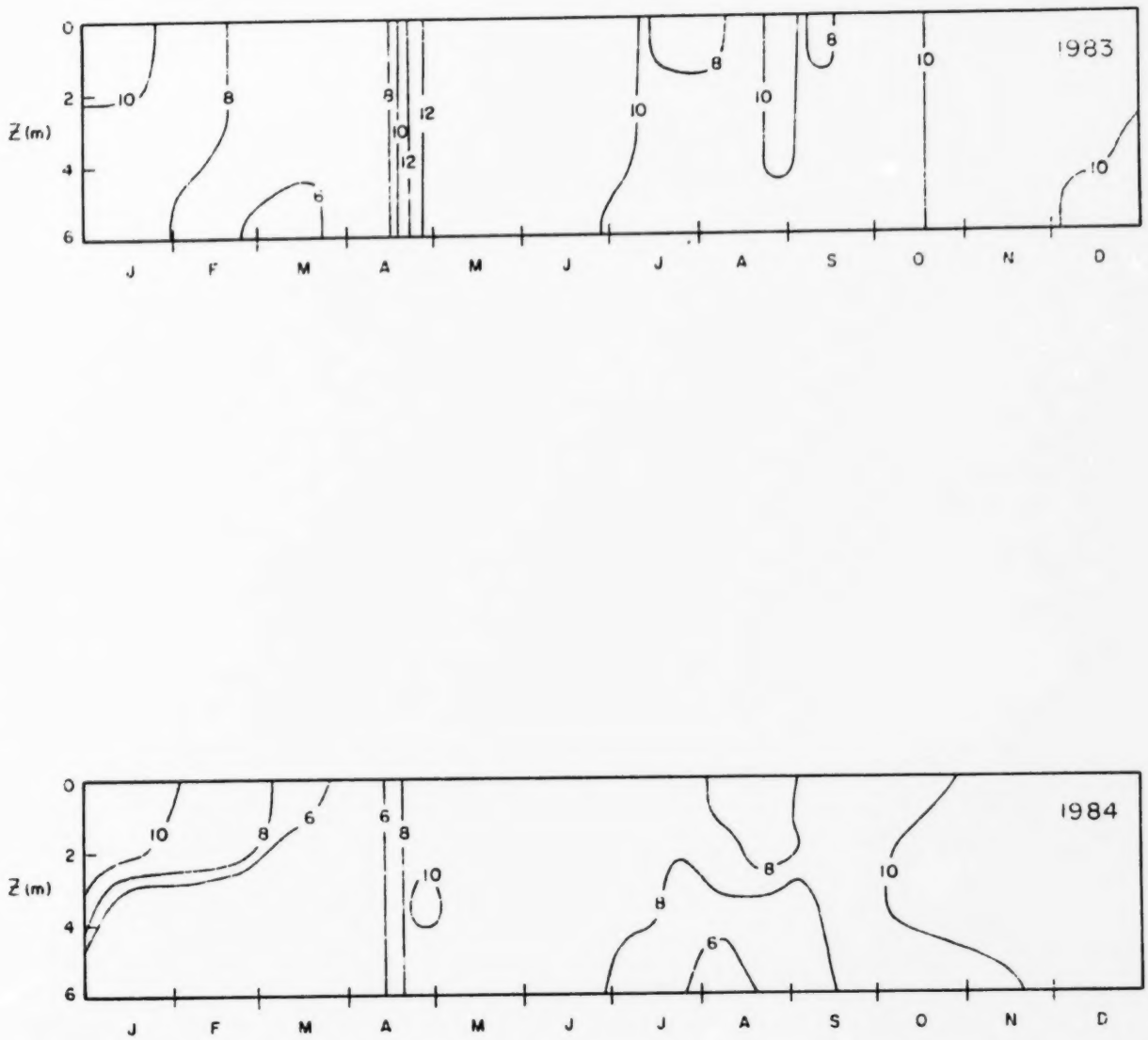


FIGURE 16

PLASTIC LAKE OXYGEN ($mg \cdot L^{-1}$)

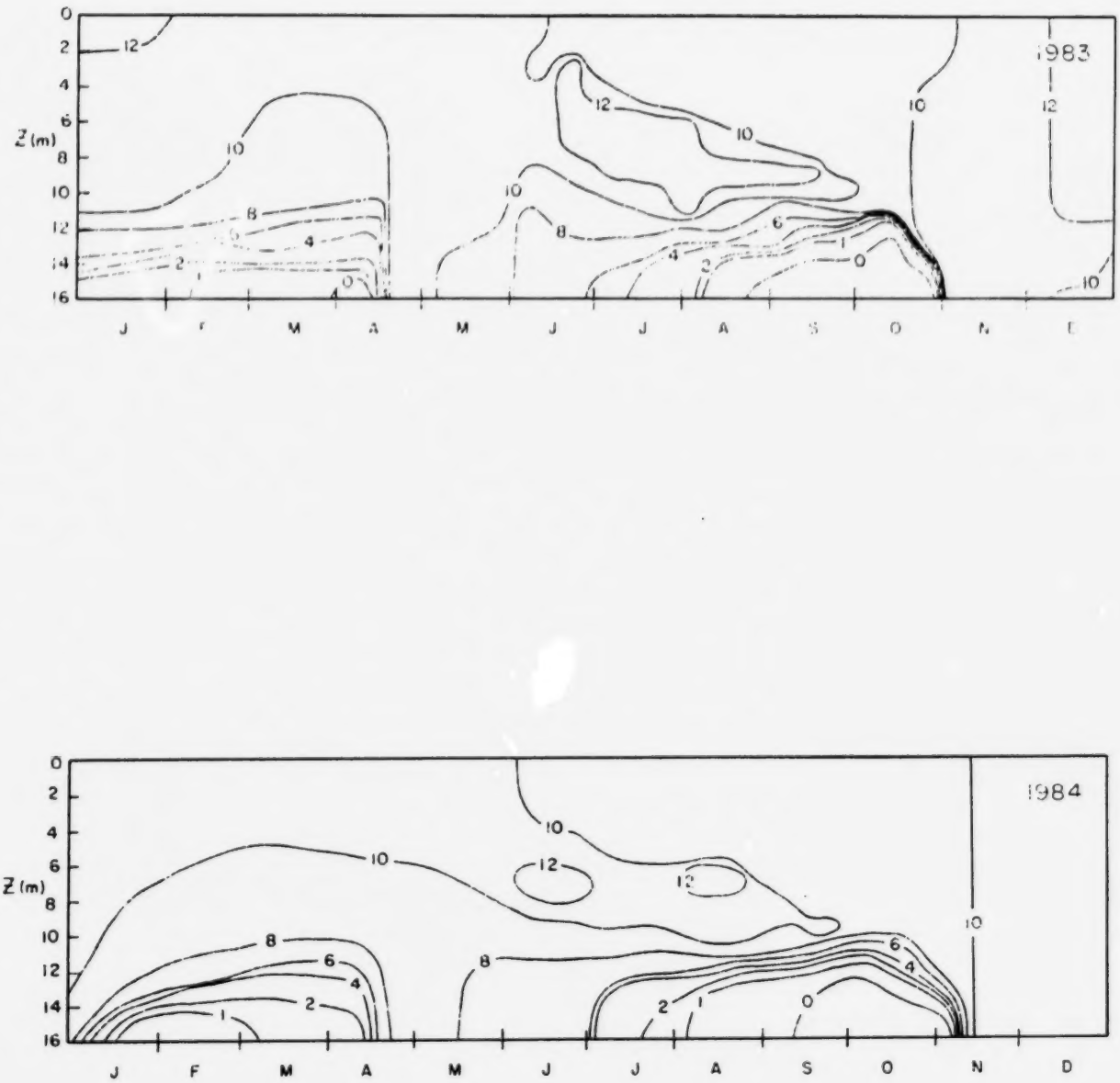
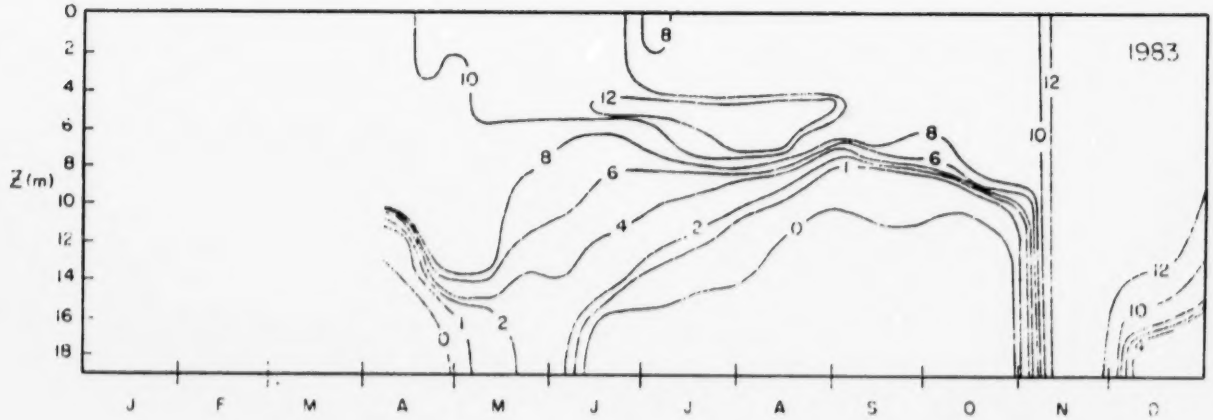


FIGURE 17

RED CHALK LAKE - EAST BASIN OXYGEN ($mg \cdot L^{-1}$)



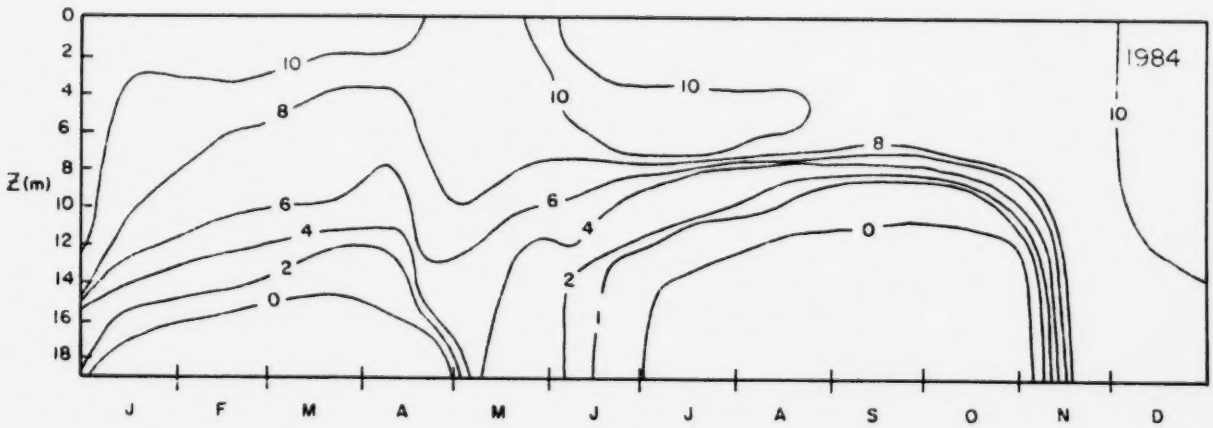
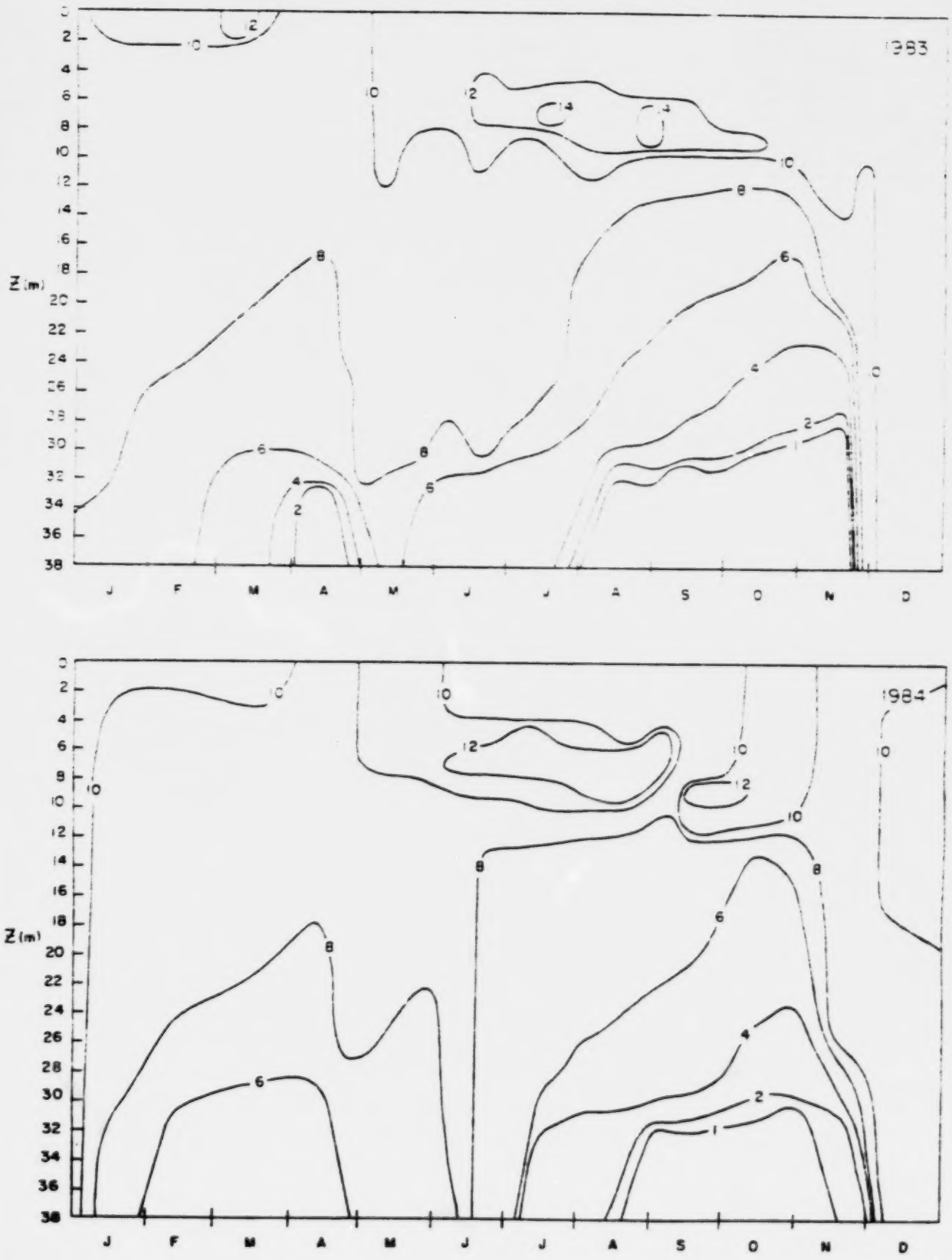


FIGURE 18

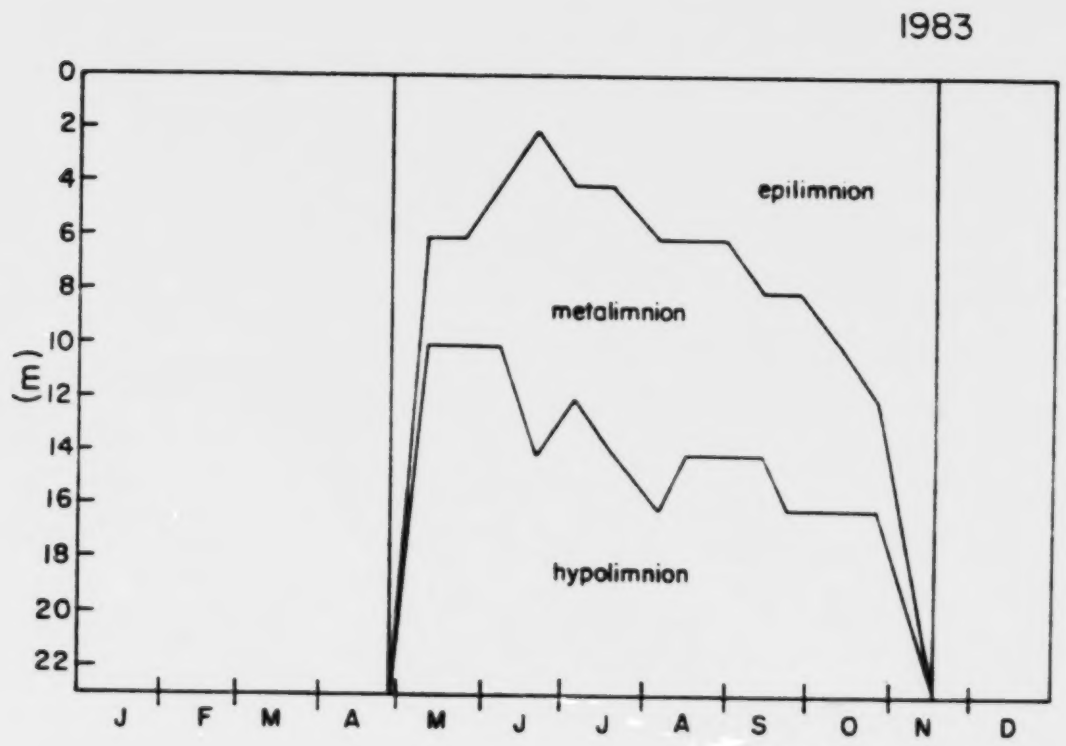
RED CHALK LAKE - MAIN BASIN OXYGEN ($mg \cdot L^{-1}$)



FIGURES 19 - 26: Depth of Strata (m) of the study lakes

FIGURE 19

BLUE CHALK LAKE - DEPTH OF STRATA



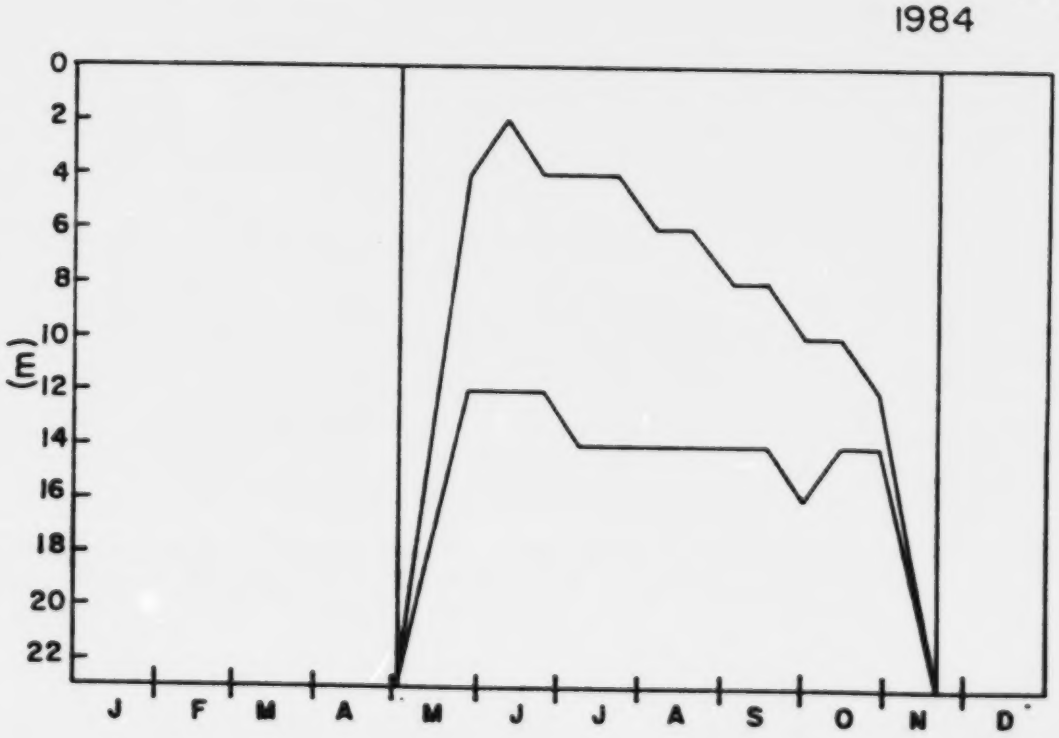


FIGURE 20

CHUB LAKE - DEPTH OF STRATA

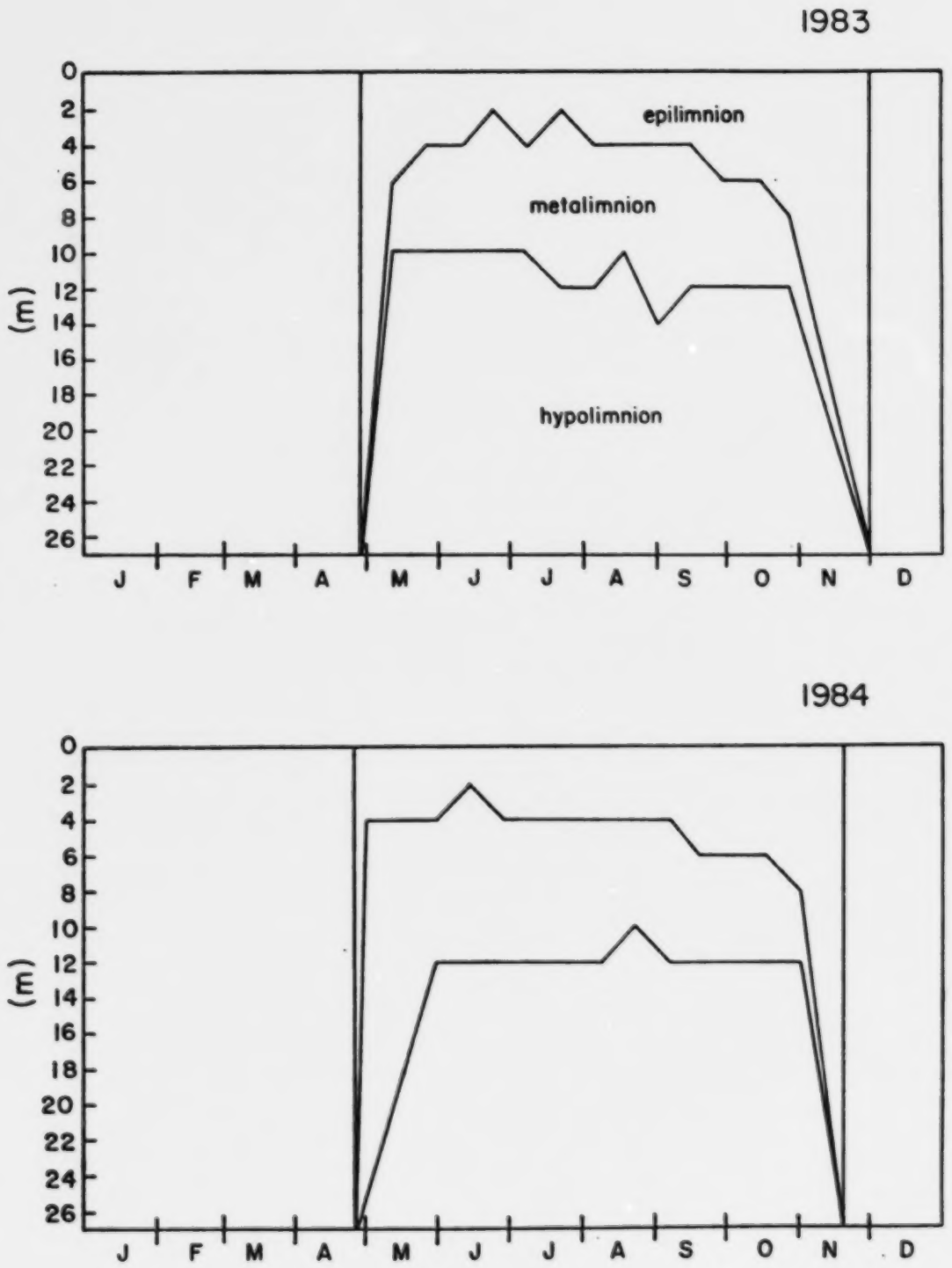


FIGURE 21

CROSSON LAKE - DEPTH OF STRATA

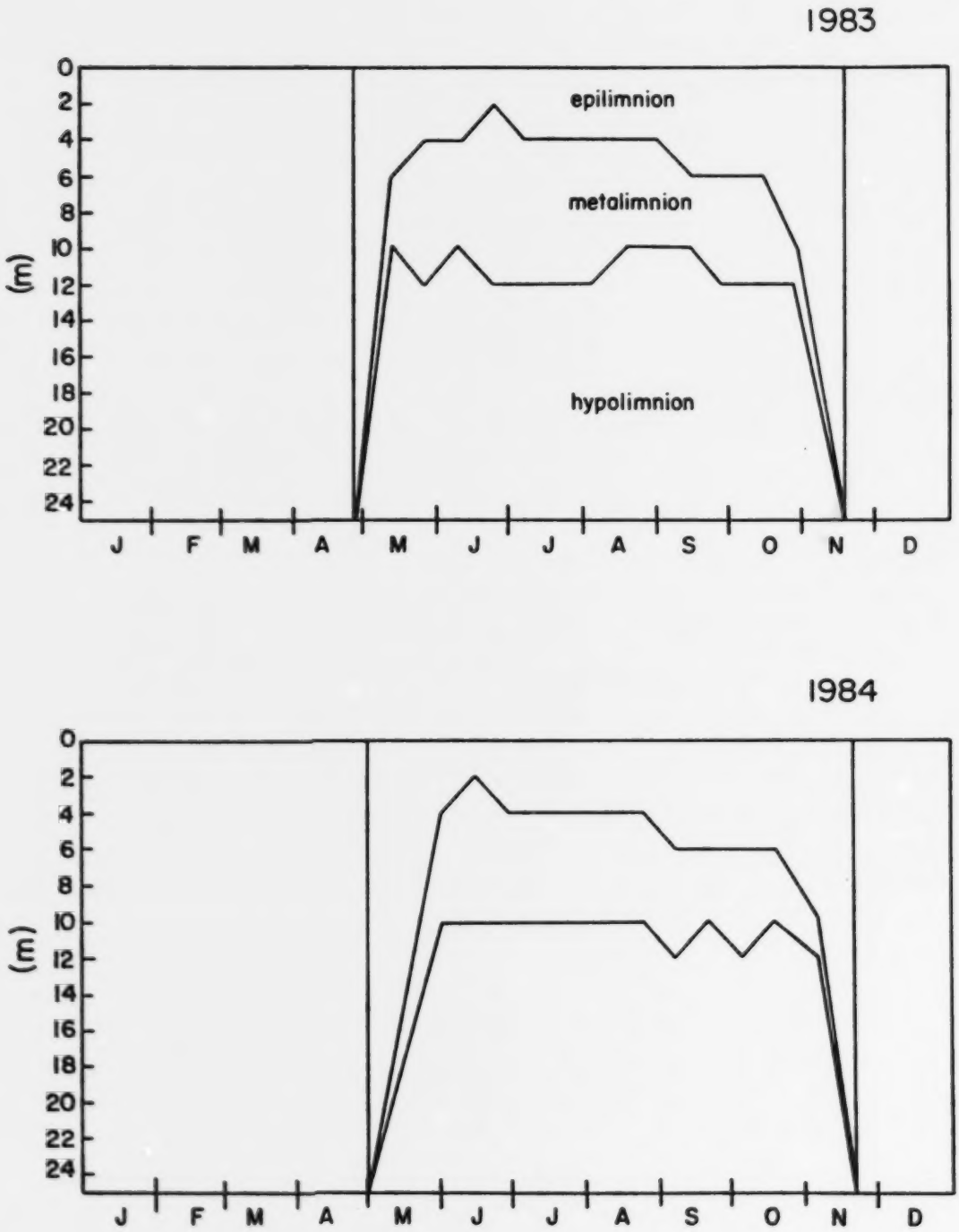


FIGURE 22

DICKIE LAKE - DEPTH OF STRATA

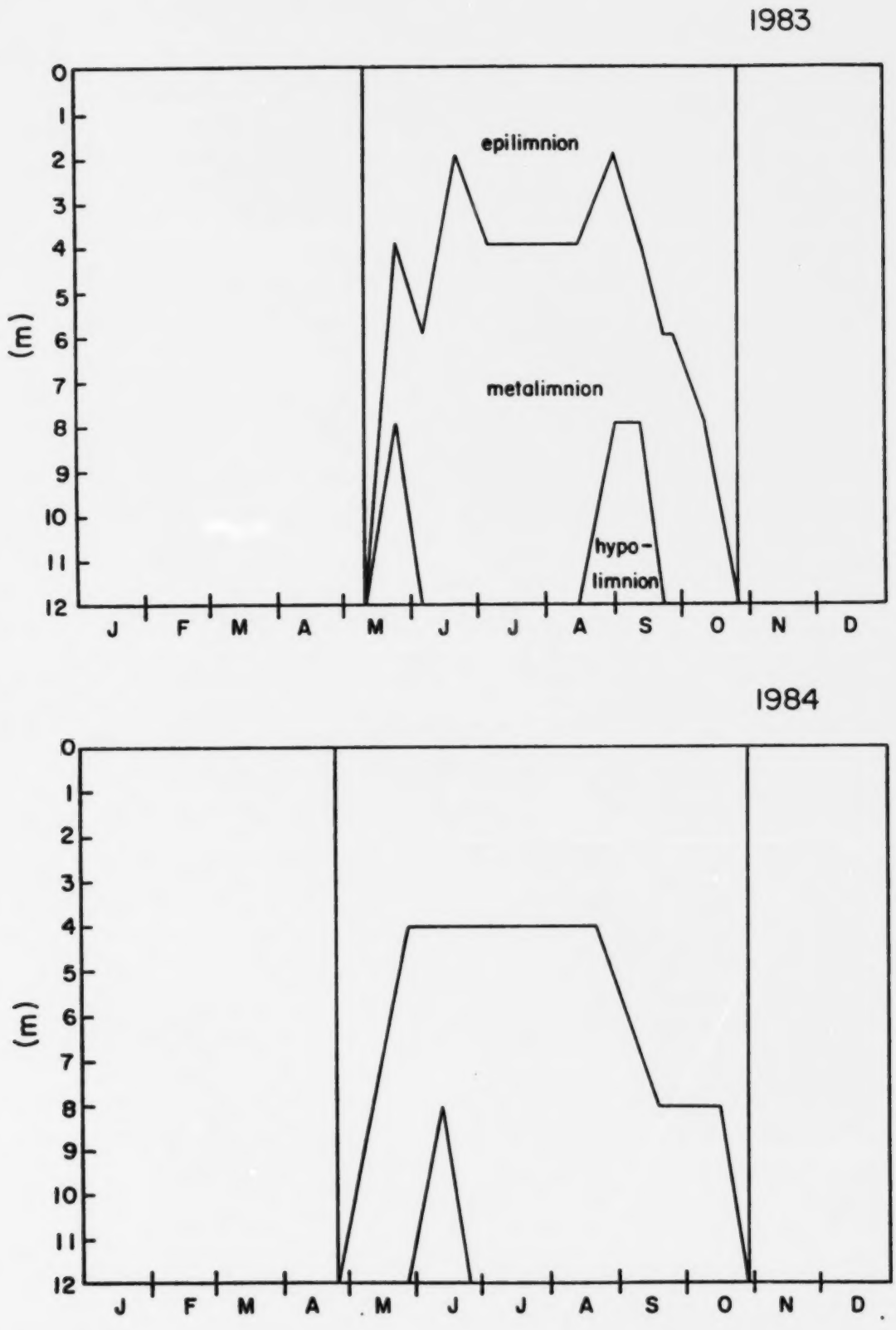
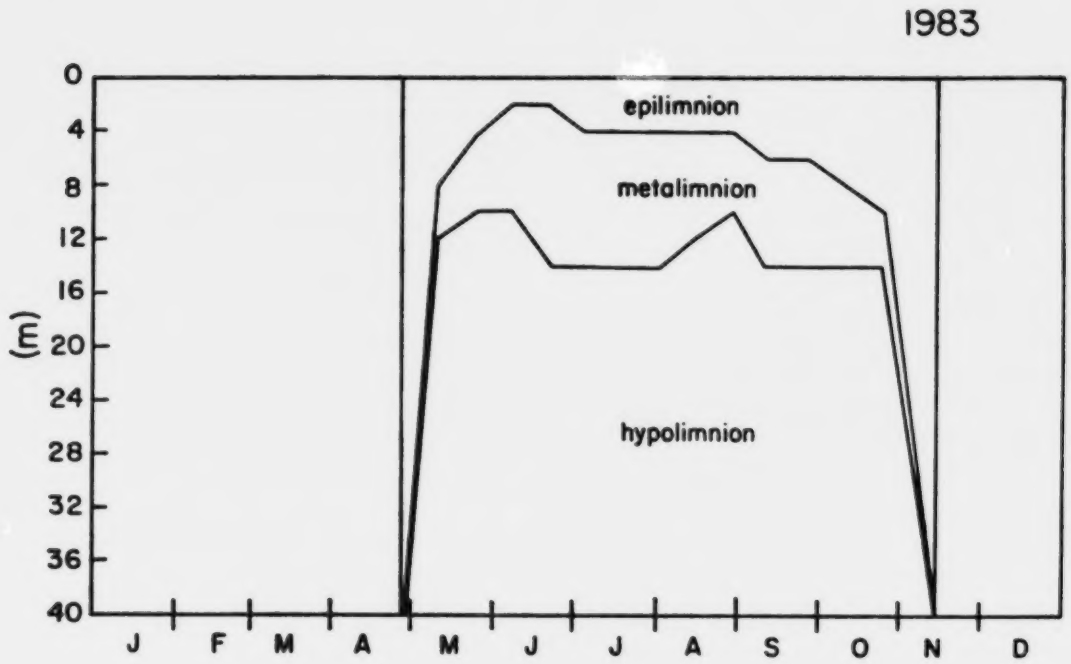


FIGURE 23

HARP LAKE - DEPTH OF STRATA



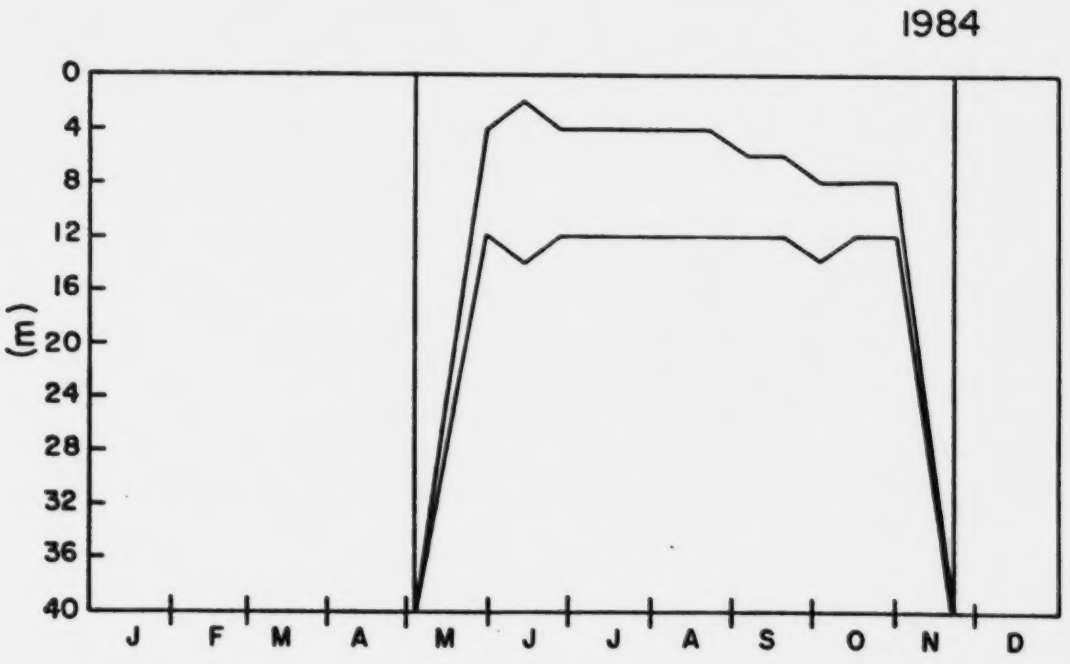
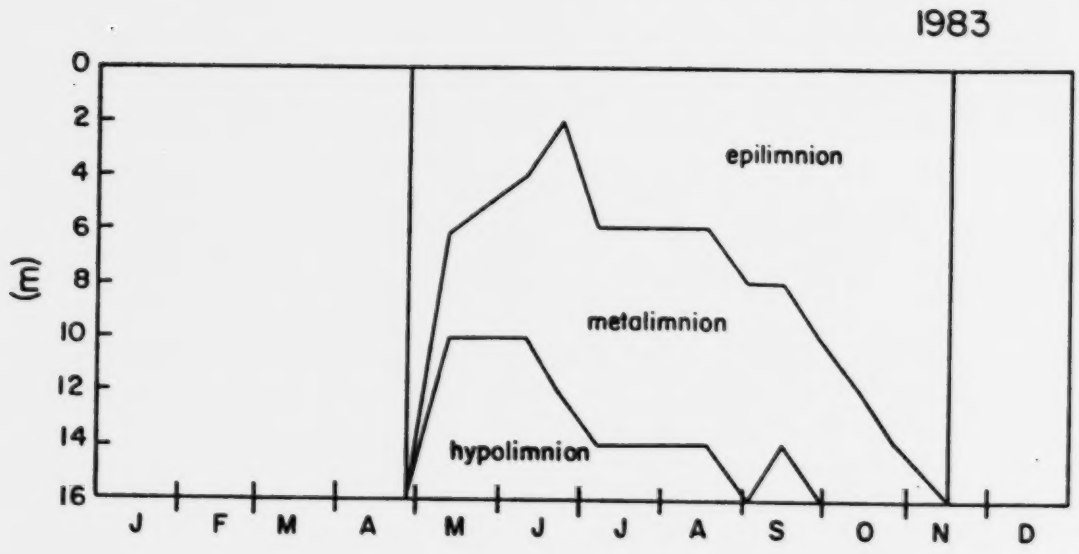


FIGURE 24

PLASTIC LAKE - DEPTH OF STRATA



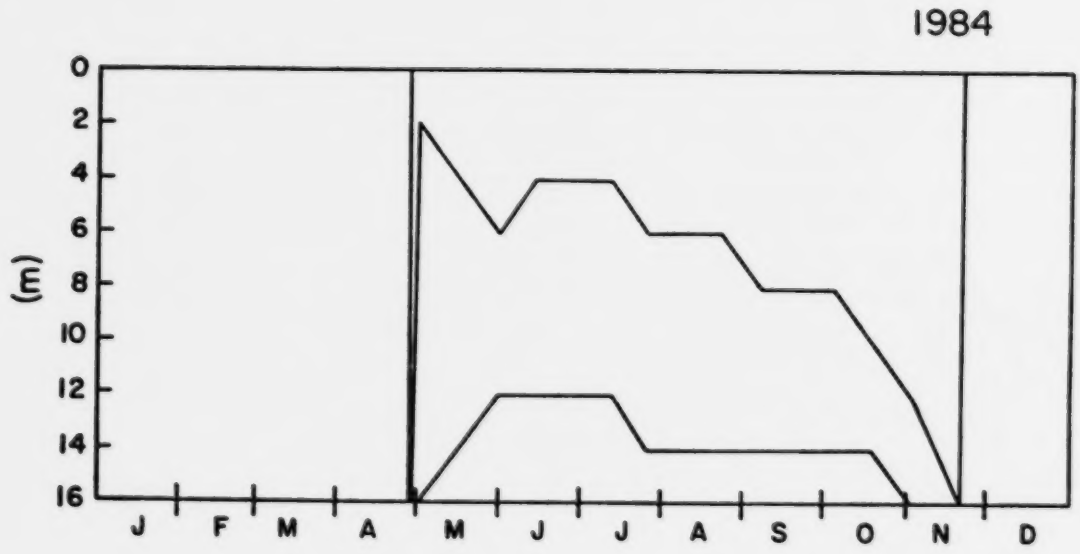
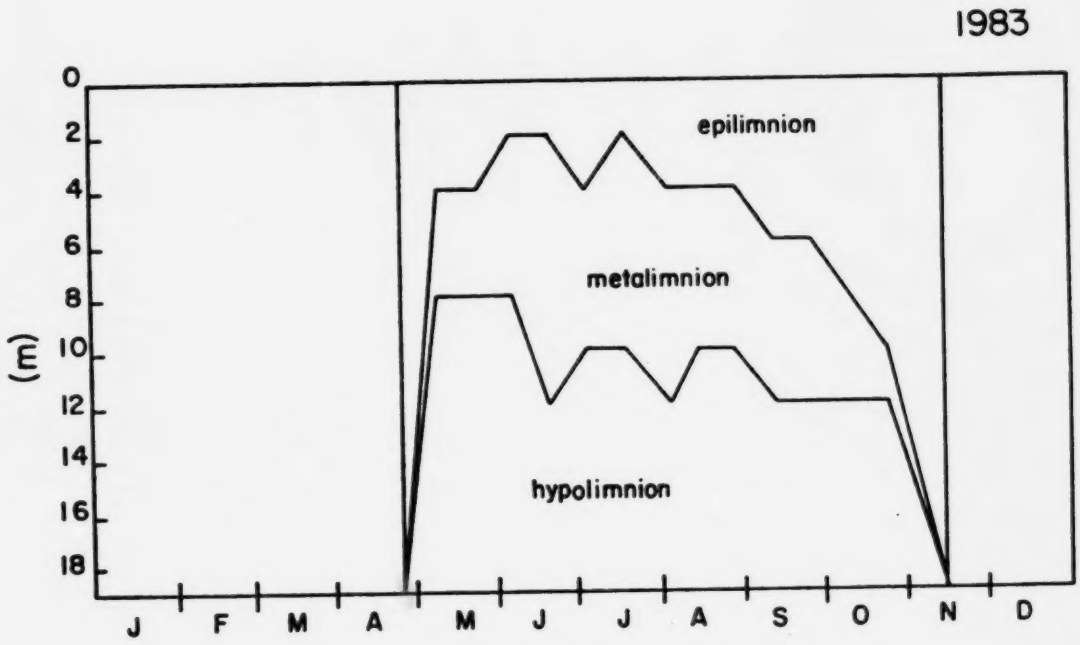


FIGURE 25

RED CHALK LAKE (east) - DEPTH OF STRATA



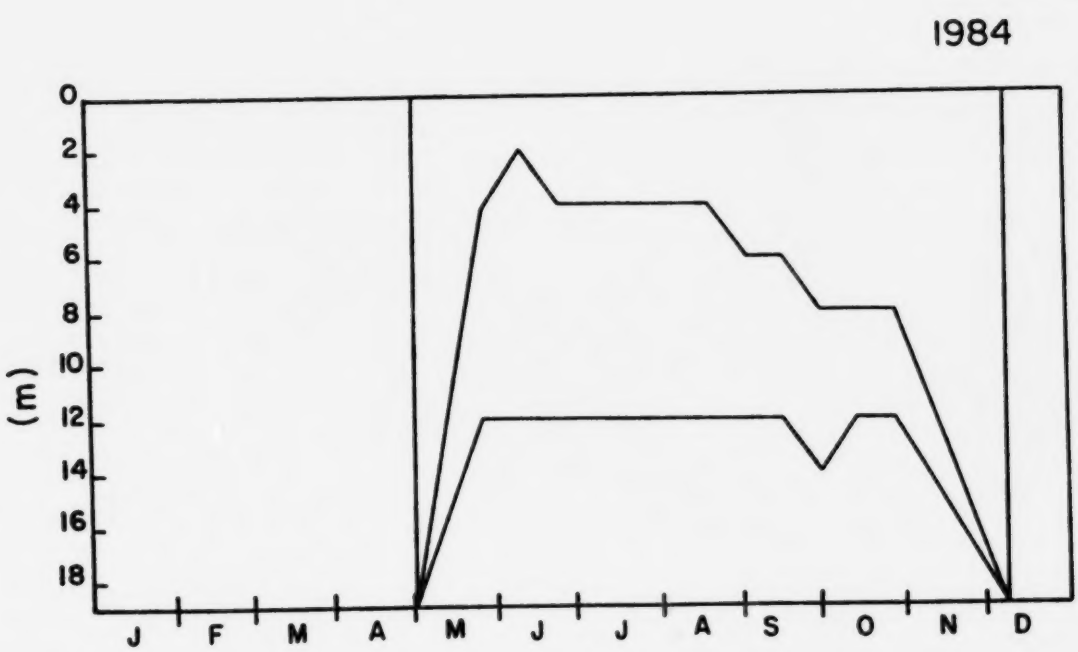
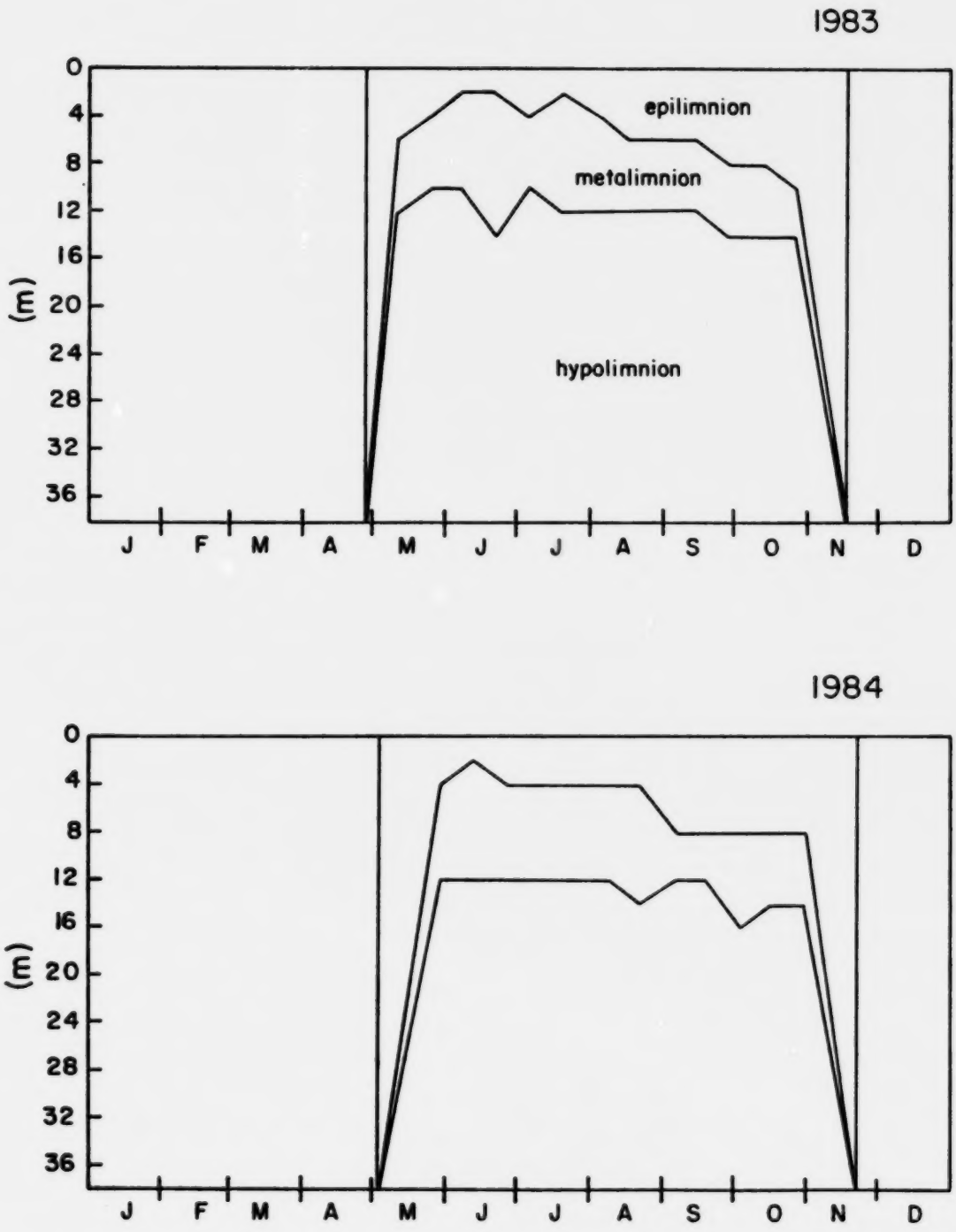


FIGURE 26

RED CHALK LAKE (main) - DEPTH OF STRATA



FIGURES 27 - 34: Volume of strata ($10^5 m^3$) of the study lakes

FIGURE 27

BLUE CHALK LAKE - VOLUME OF STRATA

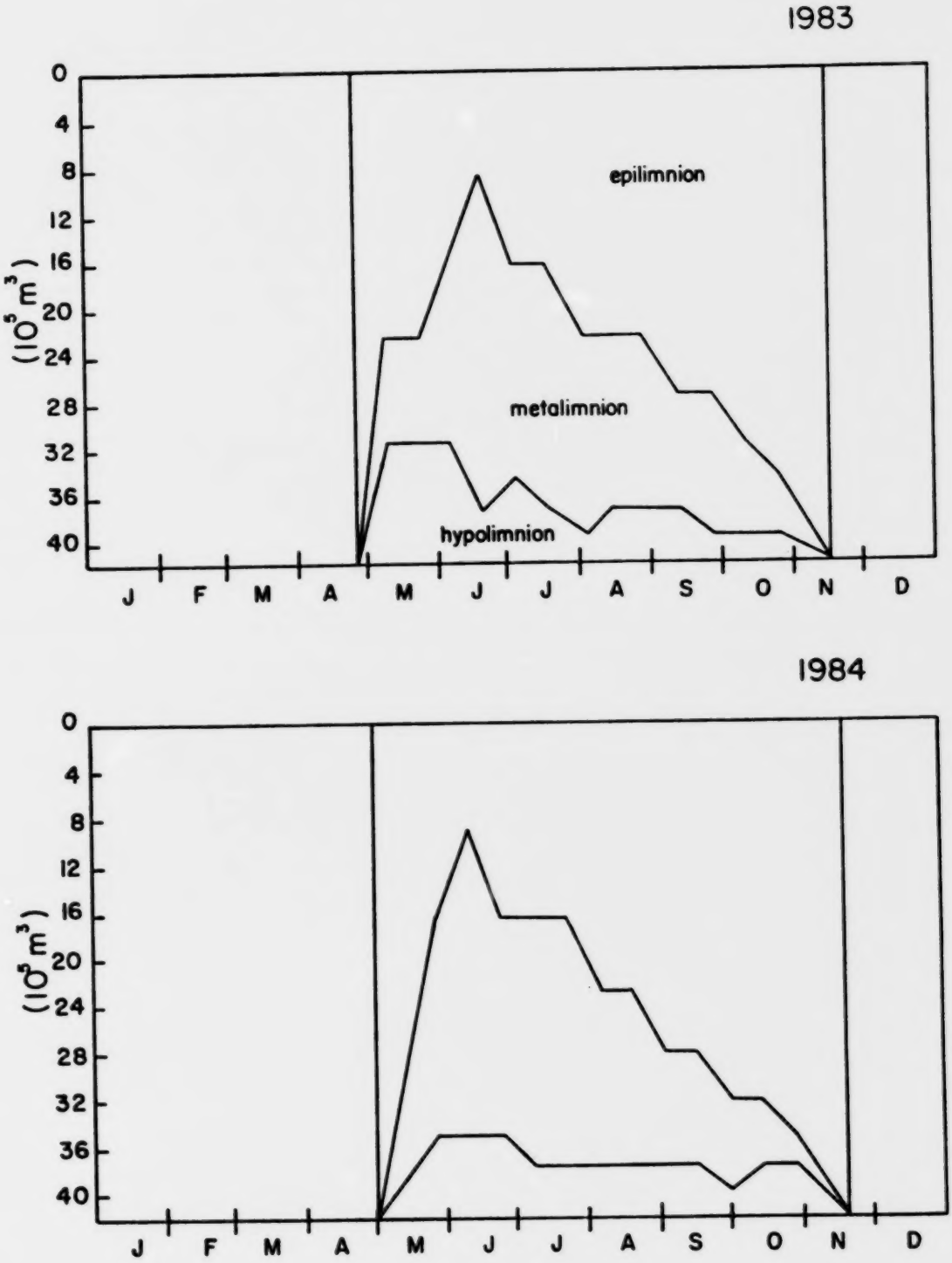


FIGURE 28

CHUB LAKE - VOLUME OF STRATA

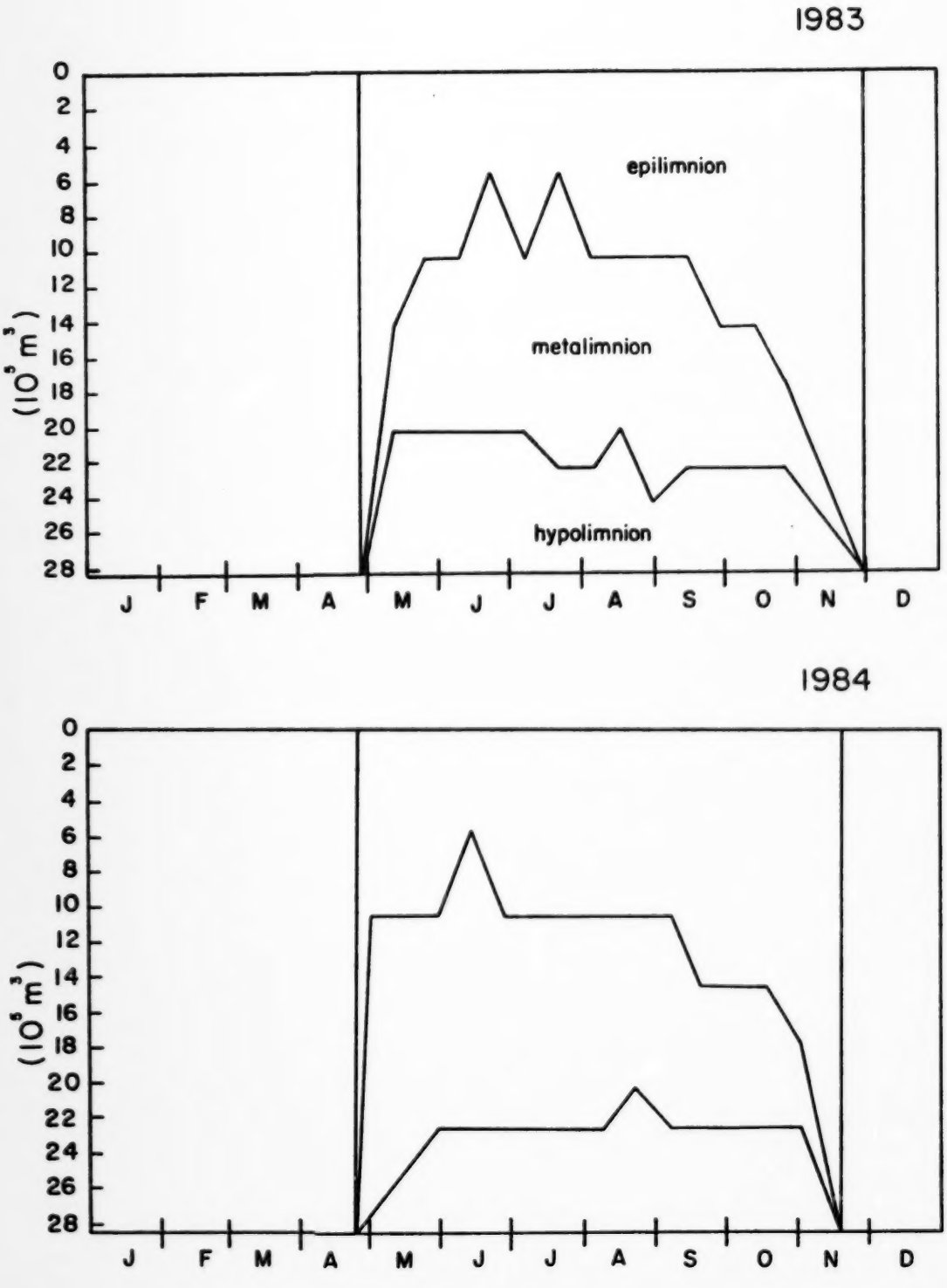


FIGURE 29

CROSSON LAKE - VOLUME OF STRATA

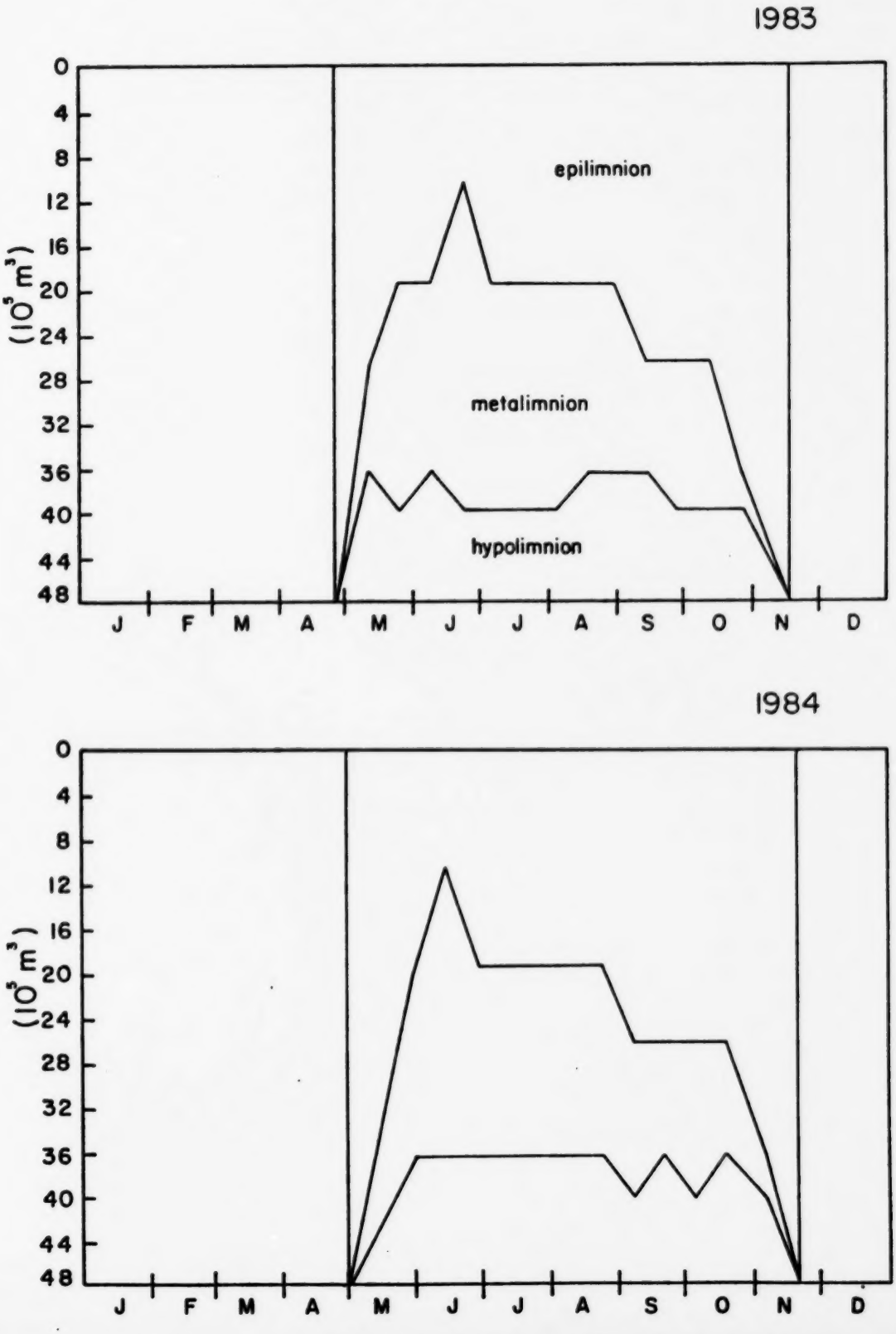


FIGURE 30

DICKIE LAKE - VOLUME OF STRATA

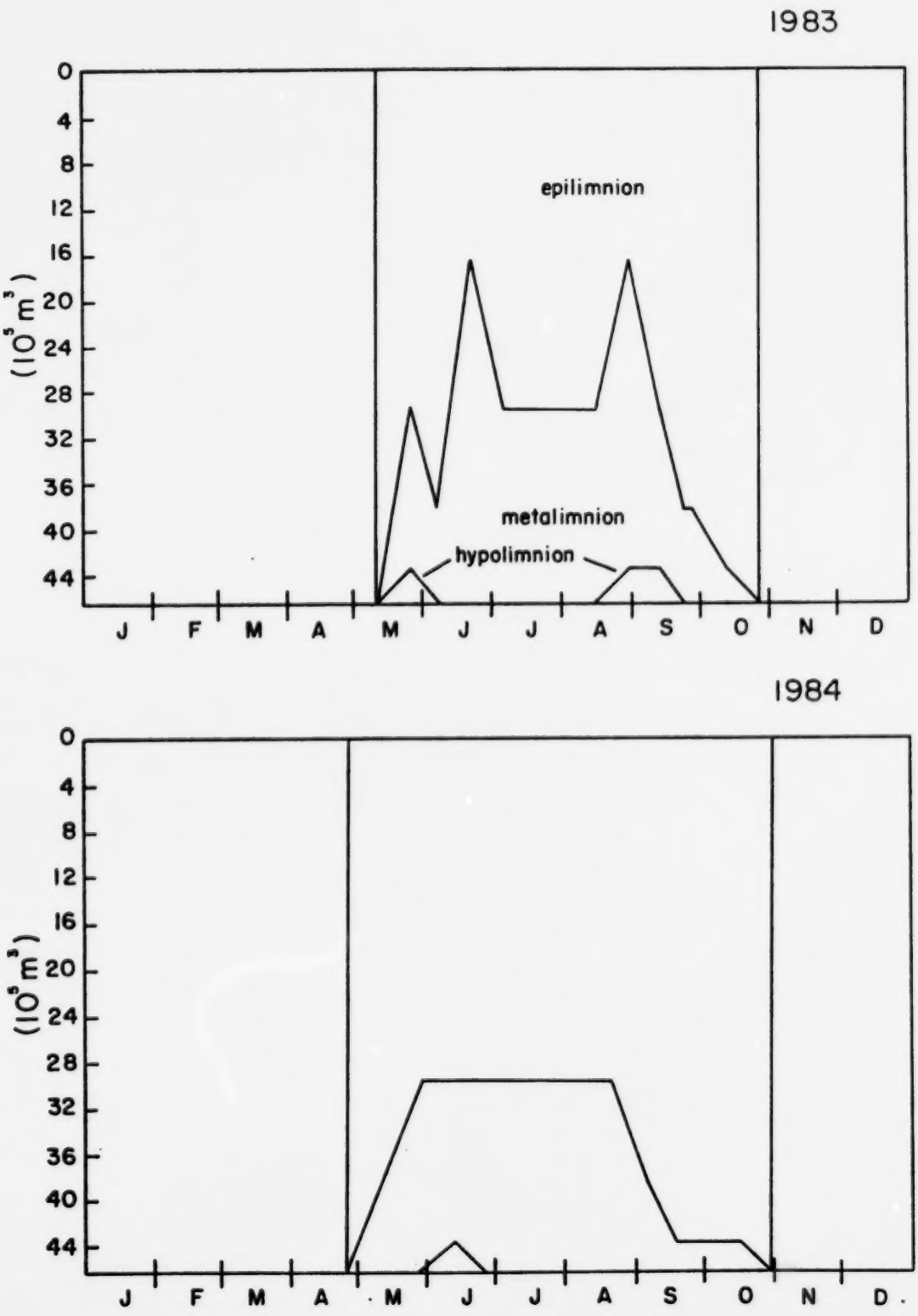
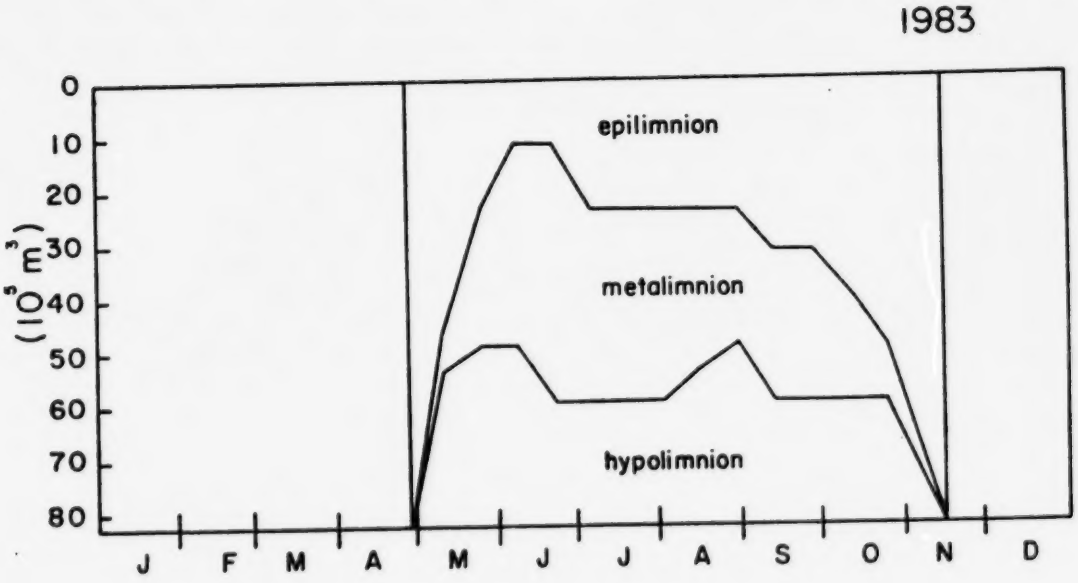


FIGURE 31

HARP LAKE - VOLUME OF STRATA



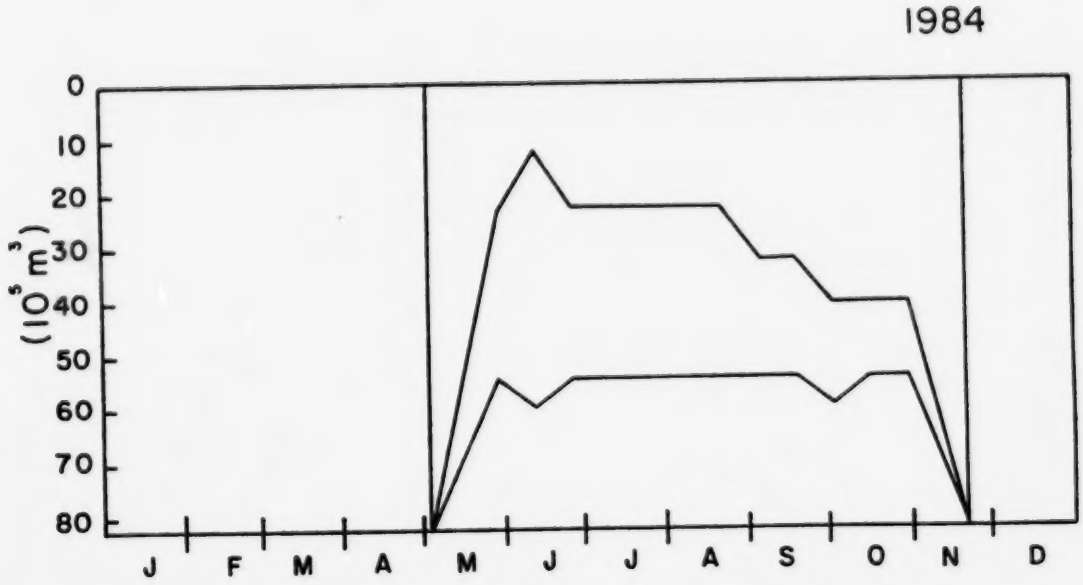


FIGURE 32

PLASTIC LAKE - VOLUME OF STRATA

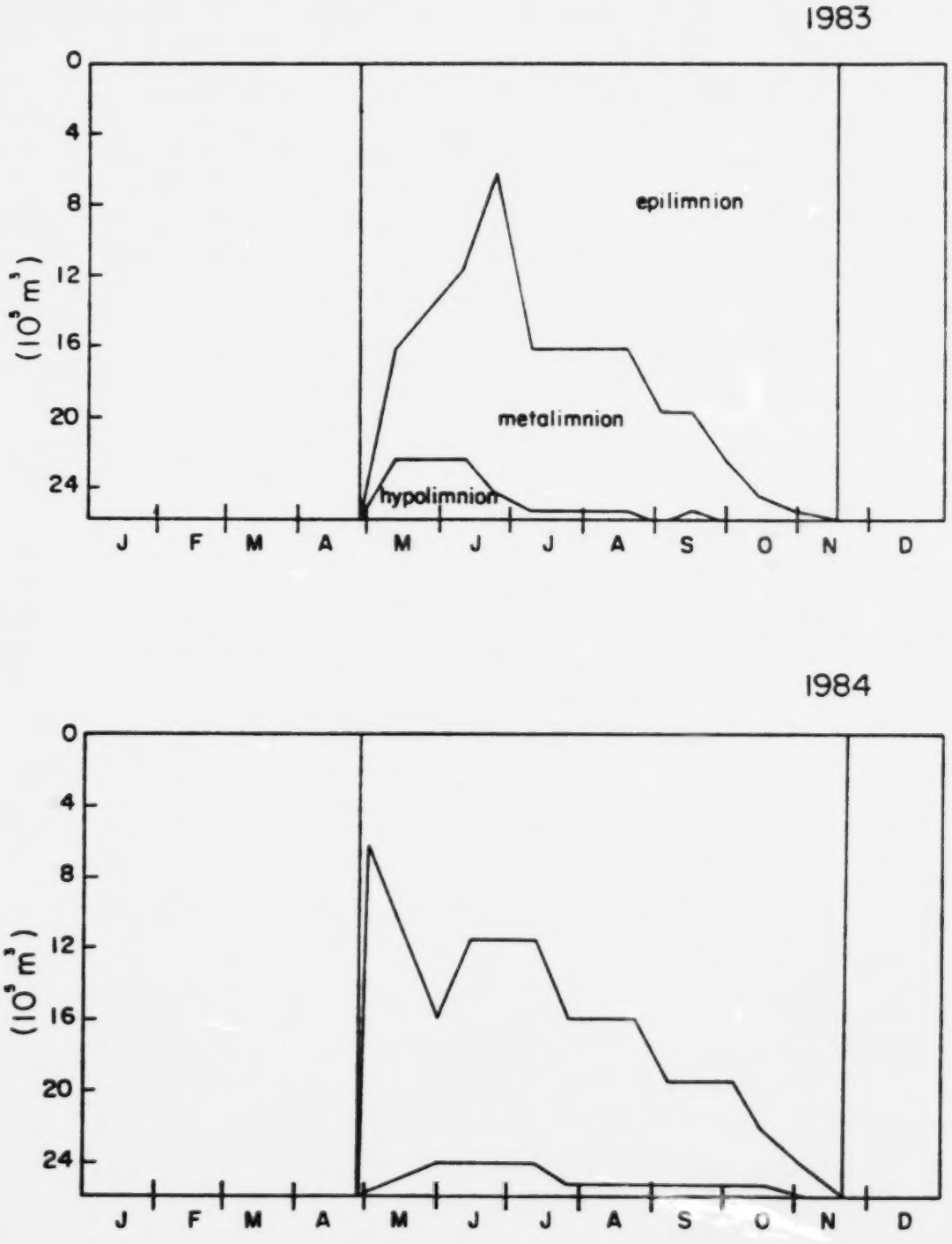


FIGURE 33

RED CHALK LAKE (east) - VOLUME OF STRATA

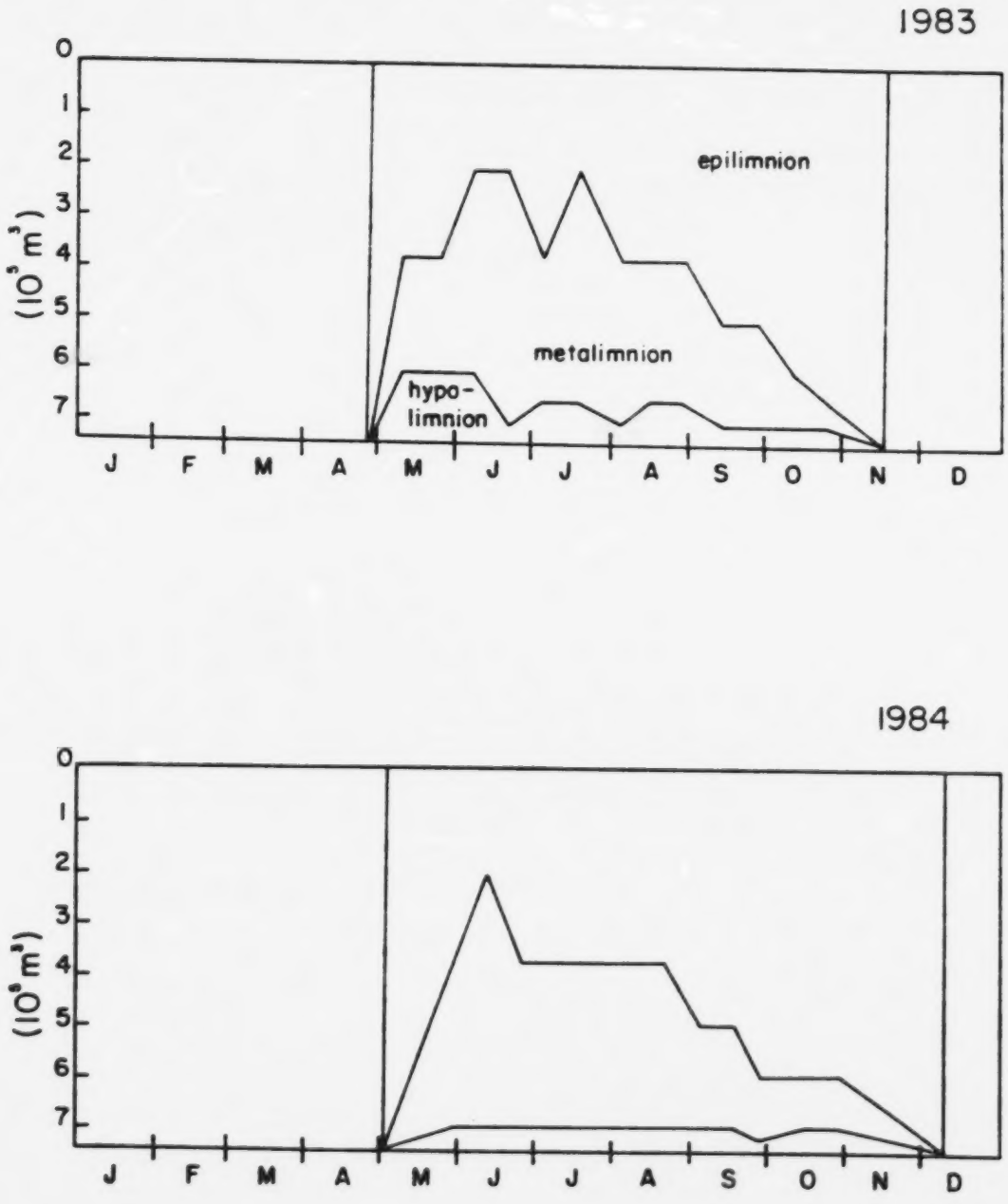


FIGURE 34

RED CHALK LAKE (main) - VOLUME OF STRATA